AUG 4 1923

ESTABLISHED IN 1872

PAPER TRADE JOURNAL

THE INTERNATIONAL WEEKLY OF THE PAPER AND PULP INDUSTRY

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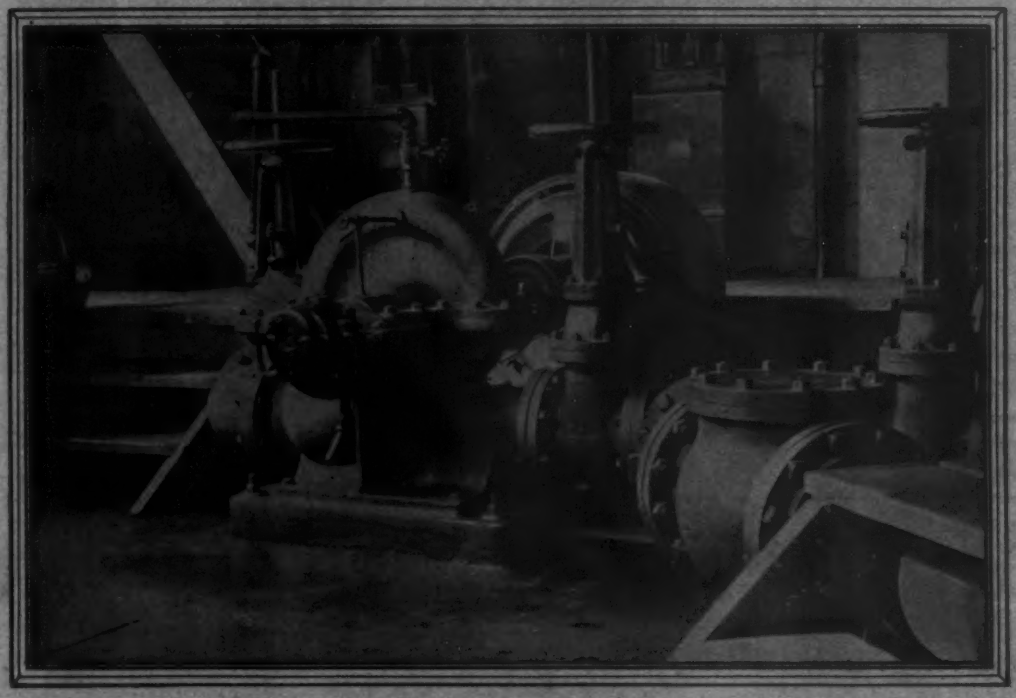

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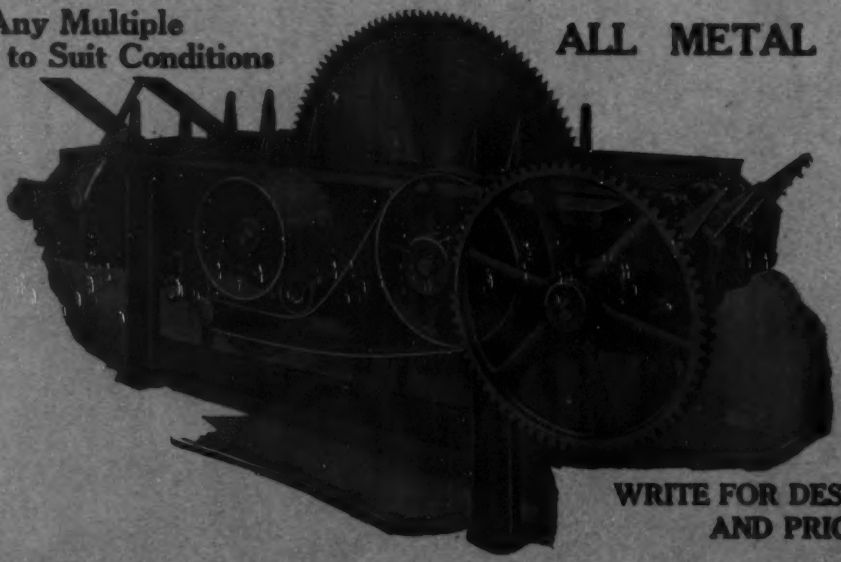

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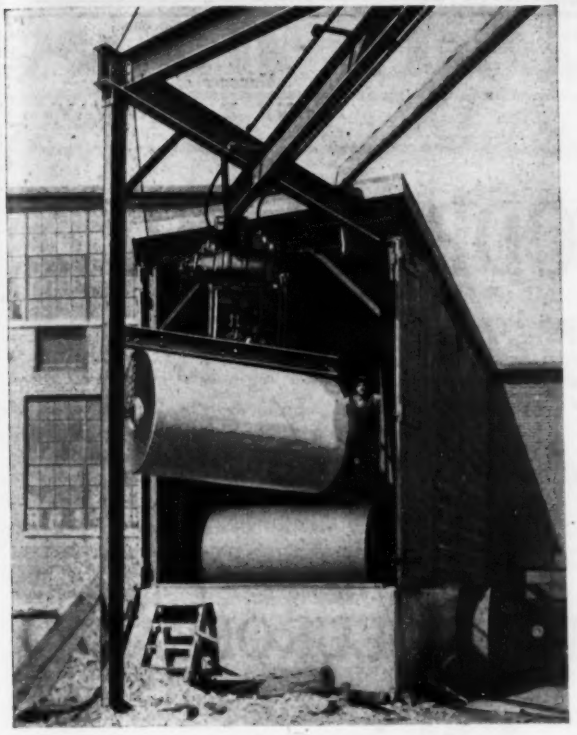

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Wherever paper is lifted or moved from machine to storage—from warehouse to car, the Shepard Aerial Railway of Industry will greatly simplify the operation. It is ideally adapted to every paper handling operation.

For simplified lifting—speedy moving—the economical handling of your paper tonnage—investigate the advantages of the Shepard Aerial Railway of Industry. Many manufacturers have adopted this system because it pays for itself over and over in saving time, stepping up production and decreasing costs.

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SHEPARD ELECTRIC CRANES & HOISTS

PAPER TRADE JOURNAL
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THE INTERNATIONAL WEEKLY OF THE PAPER AND PULP INDUSTRY AND THE PIONEER PUBLICATION IN ITS FIELD
FIFTY-SECOND YEAR
Published Every Thursday by the
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ESTABLISHED IN 1872

PAPER TRADE JOURNAL

Vol. LXXVII. No. 5 NEW YORK AND CHICAGO Thursday, August 2, 1923

MAY ESTABLISH A PAPER EXCHANGE

According to Current Rumor Plans are Being Formulated for Such an Enterprise by Certain Members of the Paper Industry who Argue that it is Just as Practical to Trade on the Floor of an Exchange in Paper as it is in Cotton or Grain—Meeting Recently Held at Atlantic City to Discuss Project And Various Plans Were Considered.

Certain prominent members of the paper industry are planning to establish a paper exchange, similar to the New York Cotton Exchange, according to persistent rumors which have been circulating throughout the trade during the past week. The various grades of paper would be bought and sold on the floor and prices would be chalked up on a board in much the same manner that they now are in the Stock Exchange.

About two weeks ago, it is reported, there was a meeting at Atlantic City, N. J., of several paper men when plans for the new organization were discussed. Directors have been elected and George Gair is one of them. John R. Mauff, executive vice-president of the Chicago Board of Trade, is also said to be one of the organizers.

The whole movement is closely identified with the boxboard manufacturers who were connected with the Armstrong Bureau. Members of the board industry have been making strenuous efforts to stabilize their product and now that the United States Supreme Court has interpreted the methods of the bureau to be in violation of the Sherman anti-trust law it is believed that they are turning to a central exchange to accomplish the same purpose.

Just where the exchange will actually be located is not yet known. The organization will have offices in this city and in Chicago, but the details of the plan are still in a state of flux. It is proposed, however, not to confine trading on the floor to the board industry alone, but to extend it throughout the other grades of paper.

Comment on the scheme is diverse. Some members of the industry are inclined to look upon it as too visionary to succeed. Others say that the expense and complications of organizing would be too great. Those who look upon it with favor claim that it is as practical to trade on the floor of an exchange in paper as it is in butter, eggs, coffee, cotton, or grain.

Officially Open Mill at Natural Dam

[FROM OUR REGULAR CORRESPONDENT.]

WATERTOWN, N. Y., July 30, 1923.—The paper mill of the Oswegatchie Paper Company at Natural Dam, which since being rebuilt has replaced the old Aldrich Paper Company mill which burned down June 4, 1920, has been officially opened and for an indefinite period will manufacture newsprint.

While the larger portion of the new mill is entirely new the walls of the old structure are still standing and form a part of the new plant. Construction of the new mill has been under way since last September and the new plant is much larger than the one of the Aldrich Paper Company.

The new mill is turning out 50 tons daily with one 164-inch paper machine of the type manufactured by the local Bagley and Sewall Company. The natural dam at the site of the mill, after which the place was named, will furnish the hydro-electric power for the operation of the mill. The mill will also utilize power obtained from the power flume and from power companies. Two 350 horse-power boilers will be used for power and cooking purposes. Under normal conditions the addition to the hydraulic head of the power dam has increased hydraulic power so that between 2,000 and 2,500 horse-power is available. The natural dam at the site of the mill was increased in height by the old Weston, Dean and Aldrich saw mill which was later replaced by the Aldrich Paper Company.

The Oswegatchie Paper Company in the purchase of the Aldrich Paper Company interests acquired several thousand acres of timber land, the pulp logs of which are being floated down the Oswegatchie River from the Adirondacks. A great deal of pulpwood, however, will necessarily be imported from Canada, the supply from the Adirondack tract being insufficient for the use of the mill when in full operation.

Natural Dam is located a few miles from Gouverneur and the majority of the employees live in that town, commuting each day from their work via a good state road. The Gouverneur fire department will answer all calls from the mill as evidenced by a call last March when the department did excellent work when a small building—a relic of the old plant—burned down and became a dangerous unit as pertaining to the newly erected foundations and framework of the new plant. The new mill is also equipped with a sprinkler system, supplied with water from a tank of 80,000-gallon capacity but the houses and other buildings away from the main plant are subject to outside help in case of fire.

Pierce Gets Timber Contract

[FROM OUR REGULAR CORRESPONDENT.]

WATERTOWN, N. Y., July 30, 1923.—Fred C. Pierce of Croghan, who submitted the only bid for the timber on the Stillwater reservoir enlargement tract of 3,160 acres, has been awarded the contract by the State Water Control Commission. The figure of $166,310 is regarded as very satisfactory to the Board. The secretary to the Commission notified Mr. Pierce Thursday to report at once to sign the contract.

Secretary E. S. Cullings of the Board of the Black River Regulating District said Thursday that under the contract the timber must all be removed by March 15, 1925. This means that much cutting must be done this summer and the work pressed as rapidly as possible. At the same time the clearing of the waste materials will proceed under the supervision of the Regulating Board.

Ford's New Paper Process

DETROIT, Mich., July 31, 1923.—Latest attainment at the River Rouge plant of the Ford Motor Company is the manufacture of paper from pulp produced from hard wood by the soda process. Manufacture is being carried out on a large scale, with plans under way for increasing production as soon as new equipment can be installed. Process enables the company to use all of the scrap pieces from its body-building plant at River Rouge.

NEW STABILITY OF VALUES IN PHILADELPHIA MARKET

Distributors Preparing to Issue Catalogues Long Held Up in Fear of Price Changes—A. F. Mullin Plant Suffers $25,000 Fire Loss—Fine Paper Division of Paper Trade Association Discusses Trade Conditions—Dissolution of F. W. Farrell Co.—John Lang Paper Co. and Cherry River Paper Co. to Make Mill Improvements—International Paper Co. to Issue New House Organ.

[FROM OUR REGULAR CORRESPONDENT.]

PHILADELPHIA, Pa., July 31, 1923.—Though business in the closing week of the first of the two traditionally dull mid-summer months averaged up to the normal since post-war days for the fine paper division and lagged only a little for the wrapping paper trade, there were ripples on the surface as welcome as the springing up of a breeze to the becalmed sailor. The dealers in book and bond papers and others used by the printing trade found it in more active buying of requirements for the printing of direct-by-mail advertising pieces and for catalogues and in the very decidedly increased number of inquiries of a character indicating earnestness of purpose and portending sales in the near future. Although there have been in recent weeks slight price changes in commodities generally, some moving upward and a few down, there exist now such a stability in values that distributors have had their confidence restored in the matter of price stabilization and they are therefore prepared to issue catalogues long held up for fear that material changes might take place in the price of the goods listed and in the hope that reductions would result in paper prices. It is true that because of the dullness in the printing trade there recently was considerable price cutting. The worst, however, is over, many contracts having been made at the low levels and it is for these that paper stock now is being inquired after or is being ordered. In all the higher grades of printing papers, prices remain firm. During the week there were reported a few reductions, but these were restricted entirely to cheap sulphite bonds and were isolated rather than typical, being made by mills anxious to dispose of a surplus or desirous of keeping machines running full time even at little or no profit as preferable to idleness and continuing overhead. The only plaint the fine paper distributors have to make is the slowness of collections. Even the larger printers are behind in payments to almost an embarrassing extent, their only plea being that they too are neglected by their debtors.

More Inquiries for Coarse Paper

The coarse paper market had little to distinguish it last week from the preceding, save the increased number of inquiries. Orders, however, have not as yet appeared in increased volume. Prices in the cheaper grades of wrappings such as grey express, screenings, and silk fibers are a trifle firmer than they were but no substantial advances have taken place. There is a plentiful supply of manilas and tissues, but not so large a one of news print, importations of the latter having recently fallen off considerably. Number one Kraft is in fair demand with the market absorbing nearly all of the highest grade offered but there is a little oversupply of number two Kraft and of imitation of it and these are being disposed of at almost any price that will bring a volume order.

Paper Stock More Active

The lethargy in the paper stock market was broken during the week, by increase both of inquiries and of orders, and especially by the entrance into the market of mills which for some weeks were not represented. The trade opines that considerable raw material had been accumulated before the national holiday and that since it has been worked up into stock or, at least, that the end is in sight and therefore that the mills again are in the market, confident that there will be sales for their products when the fall season opens. The result was a steadying of prices for commons and in some instances a recovery to the point of quotations which the trade has been giving out for the last two months but which not always were adhered to in the transactions with the mills.

Fire Destroys Mullin Co. Plant

Twice within a week fire visited warehouses of local stock packers. The largest damage was done to the three-story brick building, 1221-1223 Bainbridge street, owned and occupied by A. F. Mullin & Co., and one of the larger rag structures of the city. Origin of the fire is not known but the firemen, because of a break in the main shutting off the water supply almost entirely, were forced to the old time bucket brigade tactics, with the result that considerable time passed before the flames were extinguished, causing a loss roughly estimated at about $25,000. The nearby warehouse of Arthur B. Cowl, 1205 Kennelworth street, within a stone's throw of the Mullin warehouse was completely burned out, involving a loss not yet determined but reported as being total because no insurance was carried. A new location is being sought.

Meeting of Fine Paper Association

Members of the fine paper division of the Paper Trade Association of Philadelphia, meeting during the week at the Bourse, indulged in a symposium on trade conditions and found them fair and satisfactory, the time considered. One of the dealers recounted an experience in the hope that it might act as a warning to others. He said that a customer had called him up complaining of the unsatisfactory character of a lot of paper which he had ordered some time previous. There were no records on the book of this concern relating to this order but the customer was insistent that it had been given. After considerable investigation it was ascertained that while an order actually had been given to a representative of the house in question he had placed it with a broker for delivery, presumably splitting commission with the broker although on a salary with the distributor. He at once was discharged.

New Building for Universal Waste

One of the largest paper stock warehouses in the city is being planned by the Universal Waste Products Company, formerly located on the Parkway, and made possible by recent acquisition of a block of buildings having frontages on two streets, but abutting rears. The properties are located at 1520-1522 Kater street and 1519-1521 Bainbridge street, close to the recent temporary offices at 620 S. 15th street. The Kater street properties are four-story warehouses and these are being occupied for business purposes while the larger building is being developed. The company will tear down the Bainbridge street properties and will erect on the site a double front building in conformity with that on Kater street, giving a unit with a 36 feet frontage and depth of 120 feet. Modern electrical elevators will be installed in both buildings. The company has just contracted for a new six hundred horse power oil burning tug to tow paper stock barges, constituting the fleet maintained between the port of New York and the plant in Manayunk on the Schuykill of the Philadelphia Paper Manufacturing Company, its largest patrons. With the addition recently of these barges, there now are in operation 11 making continuous trips and each with a capacity of 150 tons. William G. Biles, manager, is supervising construction of the buildings and of the fleet.

F. W. Farrell Dissolves

Formal dissolution has just taken place of the F. W. Farrell Company, Inc., and the charter of incorporation has been surrendered. The offices, 1225 Real Estate Trust Company Building, which the firm occupied for many years, are now leased by Charles F. Koenig, for many years associated with it, and who is continuing business along the same general lines, mill representation of book,

(*Continued on page 28*)

"We can Speed up our Paper Machines —*without pitching the wire*"

"And what is more we feed the stock directly on to the wire at any speed we find necessary without the use of slices, and we are making, besides, a sheet of uniform thickness."

"It is all due to a new device that we installed a short time ago. It can be adjusted quickly and easily, and so accurate and fine are the adjustments that the sheet can be made uniform over its entire width. Our wires last longer, too, because we eliminated the slices that used to wear them down."

"The new device was easy to install. We put it right in, in combination with the flow box that we had on the machine. It is called the Voith High Pressure Stock Inlet."

This has been the experience of all manufacturers installing the new Voith Inlet. We will be glad to give you full information regarding it. A post card will bring an interesting illustrated pamphlet.

Valley Iron Works Company

Plant: Appleton, Wis.
New York Office: 350 Madison Ave.

Builders of Fourdrinier & Cylinder Paper Machines, Niagara and Holland Beaters, P. A. P. A. Rotary Pulp & Paper Screens, Wolf Chippers, Valley Wet Machines, and other high grade paper and pulp mill equipment.

NEW STABILITY OF VALUES IN PHILADELPHIA

(*Continued from page 26*)

bonds, supercalenders, and coated papers. Occupying the offices also, is Frank G. Farrell, son of the founder of the Farrell Company business, who is devoting himself to a printing and engraving brokerage business. The late Frank W. Farrell was one of the best known men in the trade with which he was associated for many years, at first with the Nescochague Mfg. Company, general distributors and afterwards entering the paper brokerage business on his own account. Koenig had been associated with the Farrell Company for 12 years when the dissolution took place and he has taken over most of the former mill representations which the Farrell company held.

Improvements to John Lang Paper Mills

A modernizing program of wide extent shortly is to be entered on by the John Lang Paper Company, in its mills at 24th and Vine streets. Although all the details have not yet been decided upon it is proposed, in a general way, to install a new filter plant, add to the dryers, do much electrifying of the units, remodel for greater efficiency and given a general structural and mechanical overhauling and modernizing. The plant produces roofing papers and allied lines.

John Murphy Sails for Europe

In furtherance of its policy of expanding its import rag and paper stock business, on which it is concentrating, John Murphy, son of the head of Daniel I. Murphy and Son, Brown Building, 4th and Chestnut streets, sailed during the week on the *Olympic* for a month and a half business and pleasure trip to Europe visiting England, Scotland, Germany, France, Spain, Belgium and Holland. The firm contemplates extensive importation of rags in these countries.

New House Organ for International Co.

Frederick C. Rowley, Philadelphia representative of the International Paper Company, with offices in the Victory Building, 10th and Chestnut streets, is whetting local interest in the matter of the new House Organ which the International Company shortly is to issue under the title of *International Paper Monthly* from its New York office under the editorship of A. G. Sclater, who is associated with the new manager of the office, J. L. Fearing, recently the Chicago sales agent and who has been advanced to the post of metropolitan general manager. Miss Mary E. McKernan of the Philadelphia office will be the general manager. E. H. Whitney of the International Co. visited the Philadelphia office during the week.

Improvements in Cherry River Co. Mills

Further improvements in the plant of the Cherry River Paper Company, at Richwood, W. Va., are announced by Vice-President C. W. Collins, in charge of the Philadelphia headquarters in the Pennsylvania Bldg., 15th and Chestnut streets. The most important unit is an additional digester, 47 feet high and 17 feet in diameter. with the extensive reconstruction and modernizing carried on during the last year during which the mills were shut down, it is now prepared to make anything in the way of sulphite pulp papers, and already is producing more than 36 varieties. The latest additions will be in operation early in December.

Philadelphia News Notes

The slogan "Use Cloudwipe for better diewiping" is being sounded nationally by the H. J. Fleming Paper Company, 1017 North Front street. A working exhibition of the new product developed by the Fleming company was shown at the recent convention of the Engravographits.

In co-operation with its Philadelphia distributors, the Enterprise Paper Company, 3rd and Callowhill streets, sales manager, A. G. Whitehead, of the Purity Paper Vessel Company, of Baltimore, Md., is conducting a direct campaign among food container users and ice cream manufacturers.

An Auto Car truck for quick long delivery service has been added by Wilder Brothers, 12th and Brown streets. Charles Wilder of the firm is summering in Atlantic City.

The Poor Richard Club composed of makers, writers and buyers of advertising honored its fellow member, President Norbert A. Considine of the Paper House of Pennsylvania, in its weekly Bulletin issued a few days ago by listing him, together with Cyrus H. K. Curtis, proprietor of the Curtis Publishing Company, and E. T. Stotesbury, financier, as Poor Richardites who are European travelers. The paper on which it was printed was donated by the D. L. Ward Company. Treasurer Raymond J. Considine is spending his vacation with his family at Sea Isle and Thomas A. Sheehan is in the Poconos. William N. Carnie, head of the shipping department, is visiting his father-in-law John Ball, general manager of the well known Bathurst Company, news print mill, in New Brunswick.

E. P. Johnson of the sales organization of the Charles Beck Company, Inc., returned to his duties, elated by the experiences he enjoyed and the information gained in the attendance at the summer school of the S. D. Warren Company. The firm reports most gratifying results in sales of its newly added line of Uncle Sam Bond made by the Hawthorn Paper Company.

The Safepack Mills, dealers in Waterproof products, have removed the Philadelphia headquarters from 410 Arch street, to 232 Ionic street, occupying the first floor for warehousing and sales room purposes. The new location is under the management of Ralph T. Lichtenstein, formerly with the Twisted Wire and Steel Company who takes the place of Elliott R. Andrews. Mr. Andrews resigned to associate himself with the Consolidated Steel Strapping Company.

The D. L. Ward Company is distributing an attractive folder setting forth the new standards in sizes of book and cover papers and the 28 catalogues which can be cut from them without waste. The booklet is illustrated with screens for half-tone reproductions, with line cuts and with other data of value to fine paper consumers.

Distribution of a new line of holly papers of domestic manufacture and consisting of ten numbers, is being begun by Matthias and Freeman, 117 N. 17th street, for the holiday trade. Representatives of the firm who attended the Convention last week of the Central Division of the National Paper Box Manufacturers' Association at Saratoga Springs included Walter H. Matthias, W. W. Daniels, New York State representative, and H. N. Cranmer, New England representative. Charles Matthias will leave in early fall for a coast to coast business trip.

John Franz, of A. Hartung and Company, Inc., 506 Race street, is enjoying a vacation in Norway, Me., with Edward S. Paret, one of the proprietors of the Biddle-Paret Press, 12th and Cherry streets, who has a camp there and which, upon the termination of their trip next week, will be occupied by S. Clayton Wicks, the other proprietor.

Telulah Mill Improvements

[FROM OUR REGULAR CORRESPONDENT.]

APPLETON, Wis., August 1, 1923.—Progress is being made on the addition to the Telulah mill of the Fox River Paper Company, where a structure 263 feet long by 28 feet wide is being built. The new building will house new boiler equipment and an air drying loft. The cost is approximately $38,000.

The air drier will be the first installed at the Telulah mill, which was purchased a few years ago from the Kimberly-Clark Company. Side walls of the building are almost up and the roof will be started in a few days.

TAPPI Recommends the use of Self-Cleaning SHOWER PIPES

The Waste Committee of the TAPPI recommends that one important point to be considered in stock saving is:

"Reclamation of all possible stock in white water by using it at the source through *self-cleaning shower pipes* and other means."

The Bird Self-Cleaning Shower pipe was designed for this particular purpose. White water can safely be used. It is a deflector type shower which automatically rids itself of all accumulations by a simple pull at the lever. It is easily installed in any part of your mill.

May we tell you about our special trial offer?

BIRD MACHINE COMPANY
SOUTH WALPOLE MASSACHUSETTS

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Canadian Builders of Bird Machinery
Canadian Ingersoll-Rand Co., Ltd.
260 St. James Street
Montreal, Canada

BIRD *Self-Cleaning* SHOWER PIPE

5464

PULPWOOD EMBARGO STILL LIVE SUBJECT IN CANADA

Threats of Reprisals If Policy Is Adhered to Not Taken Seriously—Brompton Pulp & Paper Co. Expected to Establish Dividend on Its Junior Security Soon—Manufacturers Favor Maintenance of Present News Print Prices —News Print Report Shows Astounding Production for First Half of 1923—New Railroad of Abitibi Power & Paper Co. Means Big Saving.

[FROM OUR REGULAR CORRESPONDENT.]

MONTREAL, Que., July 30, 1923.—The Canadian embargo on pulpwood continues to be a lively subject in financial and industrial circles here. The threats of reprisals if Canada adheres to its policy are not taken very seriously. The *Financial Times* of Montreal says in part:

"Canada's forests are being depleted all too rapidly, as the manufacturers in this country know full well. They want to do everything in their power to extend the life of the source of the raw materials as long as possible. Charity begins at home and if American mills had to be fed as well as our own it would not be many years before Canada would find itself in the same plight as American consumers of forest wealth now find themselves.

"The pulp and paper business in Canada is one of the clearest cut examples of an indigenous industry possible. It is one of Canada's best "Bets" and the people of the Dominion would be extremely foolish if they did not do everything in their power to protect it and get the best there is in it for their own people."

Brompton Company's Position

It has been felt for some time on the Street that the directors of the Brompton Pulp & Paper Co., Limited, were determined to take advantage of their company's steadily improving earnings to completely wipe out arrears of dividends on the preferred stock. This action has now been taken and holders of the stock are now up to date in respect of dividends—or rather they will be after payment of the last declaration on arrears is made on August 15 next. The recent declaration of four per cent payable August 15 to preferred shareholders of record July 31 as well as a dividend of two per cent payable August 31 to shareholders of record July 31 clears off all arrears and takes care of the distribution for the current quarter. These declarations bring the total declared on the preferred stock since April 19 last to a total of 14 per cent. No doubt exists that the dividend on the senior security will now be maintained as a permanency. This places the common in line for consideration in due course. It will be remembered that in the last annual report to shareholders net earnings on the common stock were equivalent to five per cent for the year.

Thus far, in the current fiscal year it is stated that business has exceeded all expectations of the management with the plants both in Canada and the United States working at capacity all of the time. The only dullness during the past few months is that seasonable one which exists at the present time. Authorities on the industry both here and in the United States are free in predicting a hearty revival in the autumn and Brompton Mills will get their fair share of any business improvement which comes along. Even at the present time, however, prices for all Brompton products are holding firmly and operations are on a satisfactory scale. It is rather difficult to predict exactly what the future action in respect of dividends will be. It is known, however that, with earnings running at a satisfactory rate, the directors are favorable to the establishment of a dividend on the junior security as soon as such declaration can be made with the assurance that the payment can be maintained as a permanency. In quarters close to the company the prediction is made that the common stock will again bear dividend towards the end of the current calendar year. This would seem to indicate that a declaration might be made with the first quarter of the company's next fiscal year.

Export Price of News Print

During the past few days manufacturers of news print paper have held conferences at which was discussed the question of news print prices. The concensus of opinions favored the maintenance of the current export price level rather than early advance to $80 a ton. Canadian mills are operating on satisfactory basis at the present price level and are able to take advantage of a far greater market on a competitive basis than would be the case were an advance decided upon.

Production and Export

The Canadian Pulp and Paper Association has issued the following report on the production and export of news print paper:

The production of news print in Canada during the first six months of 1923 has reached a total hitherto unapproached for any similar period. Up to the end of June, Canadian mills manufactured 619,802 tons of news print paper, which represents a daily average production of 3,973 tons, or about 470 tons more than the daily average throughout 1922. This tremendous increase is due largely to the addition of new machines to the productive capacity of the mills, but also reflects an increased efficiency of operation, and the speeding up of existing machines. A comparison of the production figures for the first half of this year with those for corresponding periods of previous years shows that production was 20 per cent greater than in 1922; 66 per cent greater than in 1921; and 39 per cent greater than in 1920. The production figures for the years from 1920 are as follows:—for the first six months of each year,

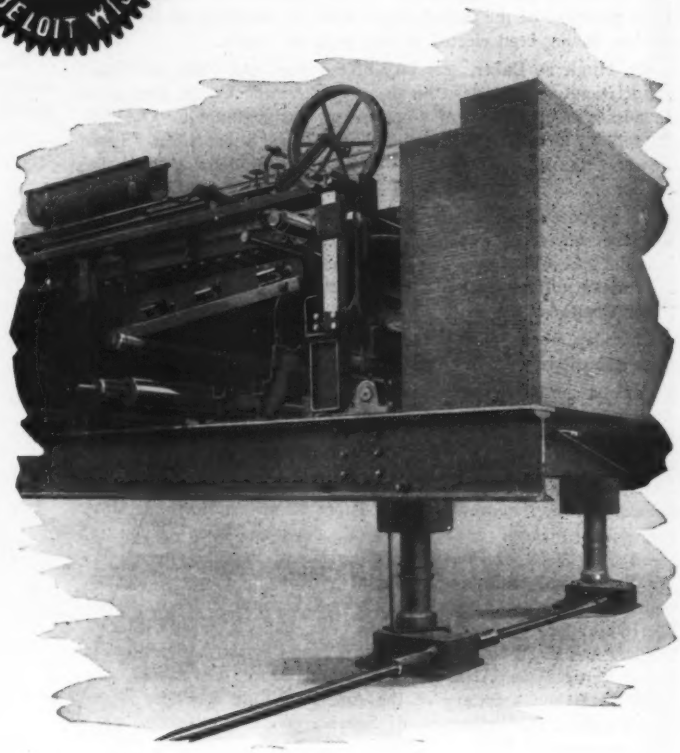
1923	619,802
1922	516,506
1921	373,988
1920	443,512

Other new machines are scheduled to come into operation before the end of the year, and with the recently installed machines getting into full production, it is expected that the production for the second half of this year will surpass that for the first six months by a considerable amount. On this basis, it is probable that the Canadian mills in 1923 will produce well over 1,250,000 tons of news print. When it is recalled that the total production in 1913 was only 350,000 tons, the magnitude of the development in this branch of industry during the past ten years will be appreciated. The consumption of news print in Canada is from 120,000 to 130,000 tons annually and approximately 90 per cent of our production is exported. Of the 619,802 tons produced in the first half of the year, 550,765 tons were exported, 536,137 tons going to the United States, and the remainder chiefly to Australia, New Zealand and South Africa. Exports in the corresponding six months of 1922 and 1921 were 457,340 tons and 319,925 tons, respectively, so that this year's exports show a gain of 20 per cent over those for 1922 and of 72 per cent over those for 1921. While Canadian exports to overseas countries have been considerably below the level of the past few years, there is a big increase in the shipments to the United States. Consumption in that country during the last twelve months has broken all records, amounting in 1922 to nearly 2,500,000 tons, of which 1,029,000 tons were imported, 87 per cent of the imports coming from Canada and the remainder from European countries. This big demand from the United States market is reflected in Canadian exports to that country, which this year have shown an increase of 27 per cent over those for last year and of 63 per cent over 1921.

(*Continued on page 32*)

BELOIT IRON WORKS PAPER MACH'Y BELOIT WIS

The Beloit Adjustable Fourdrinier



THE BELOIT ADJUSTABLE TYPE FOURDRINIER was developed to meet new problems in the art of paper making. Perfecting of a practical, adjustable type fourdrinier has given to paper men an added advantage in cutting down costs and speeding up production, at the same time eliminating many hours of valuable time that formerly was lost.

YOU will note that the whole Fourdrinier part, including the head box is supported on two very heavy I-beams which extend from the flow box down to the wire guide roll. The perpendicular pipes or housings with the ribs cast in them, which are here illustrated, are set directly in the concrete of the pit under the Fourdrinier part. The boxes containing the worm gears and screws are, therefore, located below the pit where there is no water or moisture and where, also, they are in a position to be easily inspected. From these boxes the cross shaft is led to a source of power, either motor or belt drive, and the operator on the machine-room floor has merely to start his motor or throw a lever to start the mechanism into operation.

Why not speed up your production with the Beloit Adjustable?

Beloit Iron Works BELOIT IRON WORKS PAPER MACH'Y BELOIT WIS **Beloit, Wis., U. S. A.**

Converting Paper Makers Meet

[FROM OUR REGULAR CORRESPONDENT.]

KALAMAZOO, Mich., July 28.—Raw material conditions and other problems confronting the paper industry were considered at a meeting of the Converting Paper Makers' Association, held Thursday and Friday in the offices of the Allied Paper Mills. Alex. G. Gilman, president of the Allied Paper Mills, is chairman of this association, having been elected to that post last April.

Dr. Hugh D. Baker, secretary of the American Pulp and Paper Association, gave a report on the progress made by the Bureau of Standards, Department of Commerce, Washington. C. O. Wellington, of Scoville, Wellington & Co., read a paper on "Steam Power Costs in Paper Mills." It was followed by a general discussion.

"The Perpetuation of the Paper Industry in the United States" was the subject of a paper read by W. W. Sunderland, of the Miami Paper Company. His paper was supplemented by additional information offered by Felix Pagenstecher, president of the Bryant Paper Company.

Thursday noon lunch was served at the Kalamazoo Country Club, the afternoon being devoted to golf.

Various concerns were represented at the conference as follows: American Writing Paper Company, John Wallihan; Bergstrom Paper Company, John Bergstrom and W. Bergstrom; Bryant Paper Company, Felix Pagenstecher, Allen Milham and Peter Servaas; Champion Coated Paper Company, Walter Randall; French Paper Company, Harry Parker; Hopper Paper Company, Bertrand Hopper; Lincoln Paper Mills, Cyrus E. Frye and Carl Simonton; Mead Pulp & Paper Co., W. Keetra; Miami Paper Company, W. W. Sunderland and A. H. Nevius; Michigan Paper Company, George Gilkey; W. B. Oglesby Paper Company, Cliff Anderson; Peerless Paper Company, B. Benson; Rex Paper Company, Merrill B. King and C. A. Bradford; Watab Paper Company, Mr. Towne; Allied Paper Mills, Alex. G. Gilman and George Gerpheide. Dr. Hugh D. Baker, secretary of the American Pulp & Paper Association and C. O. Wellington, of Scoville, Wellington & Co., were also in attendance.

New $1,500,000 Bogalusa Plant

BOGALUSA, La., July 30, 1923.—Work is now in progress on Bogalusa's new $1,500,000 industry. A large crew is excavating for the new paper mill. Three carloads of construction tools and machinery arrived in Bogalusa recently and the pouring of the cement for the foundations started at once.

Besides giving employment to a large number of men during the construction, the mill will give steady work to 200 more men and will result in the purchase of thousands of cords of pulp wood from the farmers of this section. When the mill is in operation it will make a kraft wrapping paper.

Improvements and enlargements are being made on the present plant, the power station having been enlarged and the pulp mill will undergo improvements.

In connection with the new paper mill will be the erection of a plant to make salt cake.

New Board Mill for Los Angeles

CHICAGO, Ill., July 30, 1923.—The National Paper Products Company, of San Francisco, a subsidiary corporation of the Zellerbach Paper Company, has announced that it has closed an option on property in Los Angeles, consisting of about thirty-five acres, upon which they propose to build a board mill and a container factory.

The plans for this mill are now in preparation and, it is expected, that the construction will commence as soon as the plans can be completed and the contracts let for material and equipment.

According to present plans, this will be a one-machine mill with a capacity of about 100 tons per day and will manufacture folding and set-up boxboards, test boards and container board.

The company at present operates a two-machine board mill and container plant, with a capacity of 200 tons a day, at Stockton, Cal., a paper products converting plant in San Francisco, a tissue and towel mill at Carthage, N. Y., and through an associated company, the Olympic Paper & Power Co., operates a hydro-electric generating plant and news print mill at Port Angeles, Wash.

The present move is in line with the policy of the company of extending its manufacturing facilities to take care of the normal growth of demand for the various products which it manufactures.

EMBARGO STILL LIVE SUBJECT

(*Continued from page 30*)

Now that the company railroad into its timber limits is running and with it some thirteen miles of branch lines, the Abitibi Power and Paper Company will be able to effect several savings. The railway will make it possible to get wood to the mill all winter, thereby rendering unnecessary a big wood pile.

All now required will be a reserve to provide against costly shut downs in case of temporary accidents to the railroad. A smaller wood pile means hundreds of thousands of dollars free which would otherwise be locked up in wood.

Also the smaller wood pile means reduced insurance charges. The company railroad brings other savings, since the logs can be loaded and brought to camp more quickly than they can be logged to the river from distant parts of the limits. These savings are important as off-setting the increased labor charges resulting from the increase of about 5 cents an hour given in May. The Abitibi is now sending out a train of paper (from 18 to 20 cars) every day in the week except Sunday.

Holyoke Mills Resist Strike Demands

[FROM OUR REGULAR CORRESPONDENT.]

HOLYOKE, Mass., July 31, 1923.—The Holyoke Water Power Company drew the water out of the canals Monday for the annual four days' shutdown and practically every Holyoke mill and all of the paper mills are closed. Few if any will reopen until Monday and none of the mills where the firemen have struck. The firemen in the mills of the American Tissue Mills, Inc., went out Thursday, the mill management and the firemen not being able to agree. This leaves the Whiting Paper Company, the Crocker-McElwain Company and Chemical Paper Manufacturing Company as the only mills likely to resume next week.

The American Tissue Mills operates three mills, one in Pear City, one in South Hadley Center, known as the Stony Brook Mill; and its Crescent street mill, used mainly for paper finishing. Negotiations were said to be on with the American Tissue Mills at the time of the strike but this seems to have been a misunderstanding. A committee from the union waited upon the mill management Wednesday and made formal demand for 80 cents an hour which was formally refused and the strike followed. The firemen are said to be counting on a "break" in the mills as soon as the shutdown is over.

Representatives of the Hampshire Paper Company, Carew Manufacturing Company, Valley Paper Company, Taylor Logan Company, Papermakers, Parsons Paper Company, Newton Paper Company, Franklin Paper Company and American Writing Paper Company issued a statement Friday afternoon in which they state that only by firm resistance on their part can the existing strike conditions be remedied.

The Craftsmen's Union furnished the humor of the stituation the past week. Most of them are out of work on account of the firemen but in spite of that sent a demand to the manufacturers for an increase of $6 a week or to the 1920 scale of $29 a week. The loftmen and the millwrights were the two other unions who, with the firemen, voted for a strike in the Allied Paper Trades Council.

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Paper Man Has Controversy Settled

Several weeks ago Paul Bunyan, well known lumberman of northern Wisconsin, came upon a strange animal whiffling about in a patch of seventh growth timber. The lumberman was leading his big, blue ox through the wood when suddenly he saw the beast quietly browsing on truffles.

"It had cow's horns, a calf's hide, iron claws and its back was equipped with a row of bony spines," Bunyan said. "In spite of its ferocious appearance it was quite docile and followed me readily after I had fed it a handful of amanitas. I believe that it is a bandersnatch or at any rate a member of that family."

Bunyan's announcement of the animal's genus immediately aroused a controversy which has spread from coast to coast. The *New York Tribune* took the matter up and after printing a picture of the creature classified it as a wiffenpoof. Others called it the only living baluchatherium.

THE BLACK HODAG

At last R. S. Kellogg, secretary of the News Print Service Bureau, decided to settle the matter through the courts and sent a picture of the animal to Judge A. H. Reid, of the Sixteenth Judicial Circuit, Wasau, Wis.

The judge immediately replied with the following decision:

"The picture is not of a wiffenpoof at all, but of a black hodag. The wiffenpoof is quite a different animal. The only hodag that was ever held in captivity was owned by Eugene S. Sheppard, of Rhinelander, Wis. This hodag once escaped and I have seen an authentic photograph of his re-capture by a posse of the most prominent citizens of Rhinelander. It is a well established fact that Sheppard captured his hodag on Section 37, Township 41, Range 11.

"The story about Barnum attempting to buy Sheppard's hodag is all wrong. Sheppard never would part with his prize and after the animal died it was mounted and kept by Sheppard at his most interesting home, 'The Pines,' in the suburbs of Rhinelander.

"The wiffenpoof is of the same family as the boojum, discovered by Lewis Carroll when he went hunting the snark. Whoever finds one will 'swiftly and silently vanish away and never be heard of again.'"

When Bunyan heard of Judge Reid's disposition of the case he rose to an exception.

"How, if it is the same hodag, could it have been out in the woods alive and at the same time stuffed and dead in Rhinelander?" he objected.

His objection was overruled.

"He couldn't have been captured on Section 37 anyhow because there are only 36 sections on the map," Bunyan insisted.

After this remark he disappeared driving his big, blue ox before him and his present whereabouts are unknown. Whether he will be committed for contempt has not been disclosed.

Backus-Brooks Co. Moves Offices

MINNEAPOLIS, Minn., July 31, 1923.—The Backus-Brooks Company and the Minnesota and Ontario Paper Company announce the removal of their main offices from International Falls to 1100 Builders Exchange in this city.

Czechoslovakia Unable to Compete

WASHINGTON, D. C., August 1, 1923.—The economic status of the neighboring countries and political conditions in Western Europe are a veritable millstone about the neck of the Czechoslovakian pulp and paper industry, according to report received by the Bureau of Foreign and Domestic Commerce, from Consul Foote, at Prague. Germany has turned to the latter country for supplies of raw material and her lower manufacturing costs prevent Czechoslovakia from competing as a supplier of finished pulp and paper.

Until the Ruhr occupation is ended and Germany can return to domestic sources of supply for pulpwood, Czechoslovakia must stand by and watch the stripping of her forests to supply German industry. Inversely as the exports of pulpwood to Germany increase the production of Czecho pulp mills decreases. Exports of pulpwood increased from 45,086 metric tons during the first quarter of 1922 to 246,494 tons during the corresponding period of 1923. Of these amounts Germany took 30,558 and 236,900 metric tons respectively. Total exports of wood pulp remained almost stationary during the same periods, being 13,508 tons in 1922 and 13,889 in the first quarter of 1923.

Farewell Banquet for J. P. Furlong

JOLIET, Ill., July 30, 1923.—A banquet was given recently in honor of James P. Furlong, felt mill superintendent of the Ruberoid Company, by the officials and employees of the company.

Mr. Furlong has resigned his position to take up his new duties as general superintendent of the Stormcote Refining Company at Elkhart, Ind., in which he has purchased an interest.

C. F. Murphy was toastmaster and spoke on the high efficiency of the felt mill during Mr. Furlong's four years with the company, bringing up the tonnage 75 per cent. Talks were made by other officials present and Mr. Furlong was given a handsome traveling bag as a token of remembrance.

Mr. Furlong takes with him the best wishes of the officials of the company and the men who worked under him.

Prices May Jump With Freight Rates

BOSTON, July 30, 1923.—The increase in freight rates, effective August 1, it is believed in this city, will have a tendency to increase the price of paper. Paper quotations for this week are the same as last week. It could not be learned just how much of an increase will be asked by paper dealers here for their various grades when the freight rates are increased.

Business at the present time in the paper trade, although quiet, is not by any means bad. Over production and lack of orders in some instances is given as the reason for business being quiet. Paper dealers here are looking forward to a volume of business by September.

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PAPER AND PAPER STOCKS IMPORTS AND EXPORTS OF THE UNITED STATES

For the Month Ending May 31, 1923, and for the Eleven Months Ended May 31, 1923, as Compared with Corresponding Months of Two Previous Years

IMPORTS—PAPER.

Paper and Manufacturers of	May 1922 Quantity	May 1922 Value	May 1923 Quantity	May 1923 Value	Eleven Months Ended May 31 1922 Quantity	Eleven Months Ended May 31 1922 Value	Eleven Months Ended May 31 1923 Quantity	Eleven Months Ended May 31 1923 Value
Paper, except printed matter (total)	.....	$7,028,035	.....	$10,582,733	.....	$74,600,488	.....	$93,198,158
Printing papers—								
Standard newsprint ....lbs..Free	162,703,171	5,649,320	230,285,232	8,610,203	1,687,526,475	65,493,042	2,158,311,214	78,221,173
All other, n. e. s. ....lbs..Dut.	346,103	22,344	2,219,443	105,696	693,160	71,856	10,678,901	577,693
Grease proof and waterproof papers.lbs..Dut.	.....	.....	413,455	34,507	.....	.....	[1]1,746,998	[1]158,783
Wrapping paper ....lbs..Dut.	6,066,041	225,585	8,636,957	398,930	24,834,594	935,126	79,132,657	3,560,642
Writing, drawing, bond, etc....lbs..Dut.	.....	.....	527,194	83,962	.....	.....	[2]2,226,349	[2]480,063
Surface coated ....lbs..Dut.	92,203	21,720	89,876	30,573	663,854	155,129	923,696	263,154
Tissue papers ....lbs..Dut.	.....	.....	203,306	114,732	.....	.....	[1]1,378,488	[1]615,724
Paper boards—								
Pulp boards in rolls....lbs..Dut.	6,671,898	154,195	6,967,731	207,308	44,313,622	1,151,000	59,392,576	1,572,056
Other paper boards, n. e. s....lbs..Dut.	.....	.....	2,144,730	62,360	.....	.....	[1]17,139,805	[1]482,582
Cigarette paper, cigarette books and covers ....lbs..Dut.	.....	606,068	1,684,749	486,625	.....	3,499,322	1,684,749	3,416,350
Photographic paper ....lbs..Dut.	104,901	27,799	266,559	54,813	2,102,582	360,935	2,219,864	462,119
Hanging paper ....lbs..Dut.	.....	31,203	455,681	34,235	.....	390,900	455,681	529,771
Decalcomania, not printed....lbs..Free	.....	5,683	63,639	16,724	.....	86,273	.....	96,059
All other ....lbs..Dut.	.....	284,118	.....	342,065	.....	2,456,905	.....	2,821,989
CRUDE PAPER STOCK								
Rags for paper stock....lbs..Free	14,484,596	195,208	46,135,555	840,683	185,869,064	2,708,460	349,158,243	5,939,752
Waste bagging, waste paper, etc..lbs..Free	.....	.....	17,025,634	228,963	.....	.....	[1]116,841,499	[1]1,549,458
Old rope and all other paper stock.lbs..Free	11,108,841	284,912	12,524,940	562,443	124,573,719	2,761,991	132,483,527	4,656,076
WOOD PULP								
Mechanically ground ....tons..Free	10,380	278,868	15,793	551,665	192,848	5,083,491	226,967	7,346,347
Chemical wood pulp—								
Sulphite, unbleached ....tons..Free	18,155	979,747	25,924	1,573,639	287,797	16,134,058	454,539	23,449,542
Sulphite, bleached ....tons..Free	14,021	1,198,360	21,782	2,049,237	132,233	11,456,776	235,571	20,259,568
Total sulphite ....tons..Free	32,176	2,178,107	47,706	3,622,876	420,030	27,590,834	690,110	43,709,110
Imported from—								
Finland ....tons	.....	.....	5,685	355,617	.....	.....	59,551	3,262,666
Norway ....tons	.....	.....	6,812	599,329	.....	.....	70,970	5,142,409
Sweden ....tons	.....	.....	1,438	93,975	.....	.....	244,699	13,406,107
Canada ....tons	.....	.....	25,784	2,003,020	.....	.....	279,925	19,595,664
Other countries ....tons	.....	.....	7,987	570,935	.....	.....	34,965	2,302,264
Soda pulp ....tons..Free	.....	.....	.....	.....	.....	.....	[1]1,066	[1]67,492
Sulphate pulp, unbleached....tons..Free	13,947	855,531	16,009	1,067,557	199,148	12,010,252	247,636	14,777,046
Imported from—								
Finland ....tons	.....	.....	3,595	206,190	.....	.....	17,582	933,990
Norway ....tons	.....	.....	316	19,702	.....	.....	8,539	444,498
Sweden ....tons	.....	.....	500	30,223	.....	.....	93,772	4,929,433
Canada ....tons	.....	.....	11,498	804,842	.....	.....	126,983	8,425,514
Other countries ....tons	.....	.....	100	6,600	.....	.....	760	43,611
Sulphate pulp, bleached....tons..Free	.....	.....	1,403	85,050	5,435	348,613	22,416	1,309,237
Other pulp ....tons..Free	.....	.....	19	308	.....	.....	[1]891	[1]36,123
CHEMICAL AND OTHER PAPER MAKERS' MATERIALS								
Color lakes ....tons..Dut.	.....	.....	.....	.....	.....	.....	[2]2,414	[2]2,972
Indigo—								
Natural ....tons..Dut.	2,523	1,962	.....	.....	23,142	28,588	14,001	13,769
Synthetic ....tons..Dut.	200	553	.....	.....	434,316	267,551	14,257	12,584
Dyes, colors, stains, etc....tons..Dut.	.....	.....	2,946	3,014	.....	.....	[2]7,322	[2]10,594
Colors or dyes, n. e. s. ....tons..Dut.	237,452	364,135	.....	.....	3,090,736	4,472,734	[2]832,001	[2]1,408,192
Colors, dyes, stains, color acids, and color bases, n. e. s. ....tons..Dut.	.....	.....	294,555	388,339	.....	.....	[2]2,313,626	[2]3,114,602
Imported from—								
Germany ....tons	.....	.....	90,281	107,886	.....	.....	.....	.....
Switzerland ....tons	.....	.....	114,304	163,935	.....	.....	.....	.....
United Kingdom ....tons	.....	.....	13,974	12,436	.....	.....	.....	.....
Other countries ....tons	.....	.....	45,996	103,782	.....	.....	.....	.....
Casein or lactarene.... {tons..Free	701,114	56,948	.....	.....	9,696,978	631,177	[2]3,288,534	[2]346,431
{tons..Dut.	.....	.....	3,504,753	591,542	.....	.....	[2]20,710,185	[2]3,418,636
Kaolin, china, and paper clay....tons..Dut.	19,610	210,170	37,861	430,884	175,811	1,840,995	294,980	3,208,580
PULPWOOD.								
Rough ....Cord..Free	17,068	154,979	13,004	104,203	152,413	1,747,862	273,090	2,464,281
Peeled ....Cord..Free	56,611	584,807	76,310	722,779	527,629	5,767,706	683,390	6,685,064
Rossed ....Cord..Free	7,708	96,912	12,136	135,268	63,697	940,454	119,684	1,572,510

[1]Beginning Sept. 22. [2]July 1 to Sept. 21.

(*Continued on page* 38)

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PAPER AND PAPER STOCKS IMPORTS AND EXPORTS OF THE UNITED STATES

(*Continued from page 36*)

EXPORTS—PAPER.

Paper and Manufactures of	May 1922 Quantity	May 1922 Value	May 1923 Quantity	May 1923 Value	Eleven Months Ended May 31 1922 Quantity	Eleven Months Ended May 31 1922 Value	Eleven Months Ended May 31 1923 Quantity	Eleven Months Ended May 31 1923 Value
Paper, except printed matter (total)	.....	$2,166,458	.....	$2,317,990	.....	$18,542,275	.....	$23,063,887
Printing Paper—								
News Print ..... lbs.	5,143,439	225,336	2,992,243	158,056	38,117,717	1,782,511	35,994,089	1,734,574
Exported to—								
Canada	332,057	19,487	91,770	9,859	1,102,833	74,810	1,566,493	115,884
Central America	207,797	10,543	86,907	4,380	1,970,314	108,515	1,407,929	76,389
Cuba	1,672,336	66,977	2,146,796	104,155	14,863,002	662,496	20,087,355	879,439
Argentina	1,265,840	50,589	.....	.....	9,249,270	364,074	2,274,830	91,120
Other South America	431,107	19,202	145,023	7,502	3,070,985	156,863	3,332,767	171,944
China	.....	.....	.....	.....	1,261,256	51,605	478,610	21,935
Japan	745,569	34,575	94,444	5,540	1,944,815	110,027	688,832	46,947
Philippine Islands	296,882	13,431	324,038	15,745	3,041,464	152,294	4,285,599	207,014
Other countries	191,851	10,532	103,265	10,875	1,613,778	101,827	1,871,674	123,902
Book paper, not coated ..... lbs.	2,631,050	244,742	2,265,249	264,673	19,168,865	2,066,989	27,125,588	2,786,382
Exported to—								
United Kingdom	70,281	15,881	38,276	8,168	377,932	76,509	547,801	116,137
Canada	203,466	19,906	199,684	28,529	2,468,754	285,468	2,436,795	295,059
Central America	33,073	2,945	71,398	8,943	505,486	68,966	514,991	58,897
Mexico	244,103	22,465	233,916	26,091	2,631,198	294,867	2,550,257	244,771
Cuba	576,481	52,346	687,477	80,121	2,934,449	253,241	7,003,673	707,099
Argentina	72,869	7,088	131,912	18,094	366,192	46,567	1,662,635	171,369
Brazil	221,496	20,882	13,991	2,227	733,742	96,301	1,291,584	140,313
Venezuela	22,572	2,601	10,551	1,696	587,756	71,115	511,361	57,258
Other South America	179,152	17,572	198,585	21,968	1,000,423	100,260	1,741,656	172,427
British India	39,569	3,715	21,454	2,265	462,429	45,854	226,825	25,479
China	181,354	15,616	192,120	19,119	1,562,606	154,525	1,239,672	122,167
Japan	284,410	17,726	146,029	15,602	2,502,779	208,498	2,247,488	180,338
Philippine Islands	280,688	22,422	194,612	16,304	1,363,817	151,291	3,419,365	303,026
Australia	108,763	10,258	37,360	4,539	657,697	64,352	796,641	89,111
Other countries	112,779	13,319	87,884	10,947	983,611	109,165	935,244	102,431
Cover paper ..... lbs.	106,914	16,676	83,413	15,315	[2]509,380	[2]77,949	1,402,917	205,768
Grease-proof and waterproof paper ..... lbs.	140,362	15,428	121,701	12,670	.....	92,503	1,226,853	161,078
Wrapping paper ..... lbs.	.....	.....	.....	.....	[1]11,682,845	[1]777,175	.....	.....
Kraft wrapping ..... lbs.	71,491	5,615	37,597	3,354	[2]387,471	[2]30,993	605,180	49,154
Other wrapping ..... lbs.	2,918,922	183,315	1,683,761	155,832	[2]14,775,418	[2]884,909	25,861,395	1,915,099
Writing paper and envelopes ..... lbs.	.....	.....	.....	.....	.....	[1]1,033,894	.....	.....
Writing paper, except in papeteries ..... lbs.	589,488	92,780	493,995	79,199	[2]2,919,091	[2]490,566	6,638,734	992,389
Surface-coated paper ..... lbs.	318,415	50,004	589,863	75,994	[2]1,319,119	[2]245,449	3,641,879	526,302
Tissue and toilet paper ..... lbs.	.....	.....	.....	.....	.....	[1]398,118	.....	.....
Tissue and crêpe paper ..... lbs.	210,748	50,884	194,348	44,828	[2]945,623	[2]230,359	2,869,535	734,213
Toilet paper ..... lbs.	748,400	66,456	523,154	67,451	[2]2,160,494	[2]216,920	4,645,962	533,886
Paper towels and napkins ..... lbs.	65,636	9,582	86,726	14,183	.....	130,964	942,987	159,930
Bristols and bristol board ..... lbs.	173,074	27,897	220,430	20,161	[2]690,352	[2]94,574	1,645,070	152,215
Paper board and straw board ..... lbs.	4,297,965	203,302	5,688,317	281,253	.....	1,470,326	45,115,309	2,135,520
Sheathing and building paper ..... lbs.	651,708	27,017	296,773	12,181	[2]2,181,091	[2]86,531	4,980,750	177,341
Wall board of paper or pulp ..... sq. ft.	522,531	24,207	1,384,670	51,746	.....	343,279	12,037,906	424,097
Cigarette paper and books ..... lbs.	32,509	12,472	50,574	15,452	[2]278,395	[2]112,177	586,477	207,749
Photographic paper ..... lbs.	138,170	141,993	175,752	197,177	[2]664,169	[2]638,559	1,259,254	1,348,909
Paper hangings (wall paper) ..... yard	1,314,131	30,234	2,037,643	48,372	.....	383,535	18,861,407	466,924
Paper bags ..... lbs.	808,862	80,283	873,524	73,700	.....	798,565	9,551,291	869,326
Boxes and cartons ..... lbs.	884,372	64,076	1,147,792	101,866	.....	884,313	9,273,826	868,575
Carbon paper ..... lbs.	66,366	48,897	81,255	65,485	.....	434,148	667,287	525,554
Envelopes ..... lbs.	250,871	49,314	236,457	46,131	[1]1,081,965	[2]203,650	2,336,189	458,487
Playing cards ..... pack	353,948	48,124	948,358	109,470	.....	380,513	8,747,622	1,012,678
Cash-register and adding-machine paper ..... lbs.	48,266	5,723	78,401	8,930	.....	95,840	959,975	100,387
Papeteries (writing paper in boxes) ..... lbs.	23,384	8,170	44,221	16,146	[2]84,960	[2]32,326	379,302	131,623
Other paper and paper products, n.e.s. ..... lbs.	3,026,193	433,931	2,496,480	378,365	.....	4,124,640	39,127,882	4,385,727
Books, maps, pictures and other printed matter (total) ..... lbs.	.....	1,471,289	.....	1,461,012	.....	15,987,768	.....	15,935,836
Books, maps, pictures, etc	.....	.....	.....	.....	.....	[3]9,481,915	.....	.....
Books and pamphlets ..... lbs.	1,886,338	665,648	1,856,558	633,905	[2]8,162,974	[2]2,979,393	21,755,635	7,487,269
Maps and charts ..... lbs.	10,333	15,216	23,614	23,716	[2]50,229	[2]76,997	170,333	158,988
Music in books or sheets ..... lbs.	44,079	24,620	61,866	37,980	[2]192,900	[2]132,341	464,981	313,436
Souvenir post cards ..... lbs.	71,974	12,099	20,308	9,378	[2]783,898	[2]101,602	367,409	168,855
Lithographic printed matter, except post cards and maps ..... lbs.	113,107	59,302	157,886	129,724	[2]660,822	[2]335,118	1,769,672	1,386,655
Other printed matter ..... lbs.	1,926,189	694,404	1,544,622	626,309	[2]8,045,811	[2]2,880,402	18,213,555	6,420,633

WOOD PULP AND PAPER STOCK.

Sulphite wood pulp ..... tons	1,542	67,130	1,194	69,205	[2]8,340	[2]362,699	12,624	737,324
Soda wood pulp ..... tons	466	41,907	217	19,600	[2]1,694	[2]153,533	2,801	245,937
Other wood pulp ..... tons	130	9,923	54	5,037	[2]783	[2]60,934	1,920	74,187
Rags, and other paper stock ..... lbs.	6,609,897	128,126	8,835,430	140,763	64,060,527	1,004,301	66,922,618	1,280,660

PAPER AND PULP MILL MACHINERY.

Paper and pulp-mill machinery ..... lbs.	369,824	120,701	570,496	94,297	.....	2,357,270	11,849,504	1,843,658

[1]July 1 to Dec. 31, 1921. [2]Jan. 1 to May 31.

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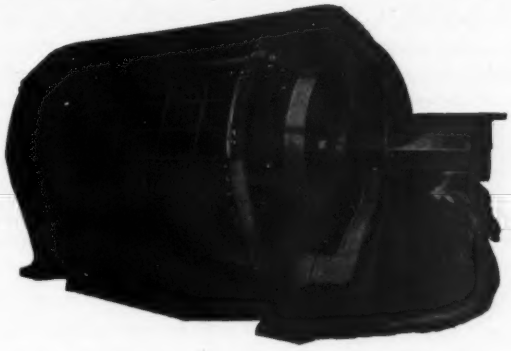
Very Low Power and Upkeep Expense



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Editorial

Vol. LXXVII New York, August 2, 1923 No. 5

HENRY J. BERGER, Editor

MARKET REVIVAL

For the first time this week has shown unmistakable signs of a revival in buying throughout the entire paper market. Manufacturers and dealers are in high spirits that the passing of the customary summer dullness should come as early as it has and are preparing for a fall and winter of unprecedented good business. There are rumors on all sides of upward inclination in prices. Mills, with machinery tuned to the highest pitch, are preparing for one hundred per cent production and there is every reason to believe that the industry is in about the best condition it has been for a long time.

This is particularly gratifying in view of two or three elements that have entered the situation from outside and threatened the stability of the market. First there was the strike among the pulp mill workers in Sweden, then came the labor difficulty in Norway, and last, but greatest of all, the threatening attitude of Canada in regard to the sale of her pulp wood to mills in the United States.

The first two problems settled themselves as labor problems usually do when they are let alone. It may be cynical, but it is nevertheless a fact, that continued loss of money due to non-production is the quickest method of strike settlement when taken along with hunger. A strike hits capital in the pocketbook and labor in the stomach, both very vulnerable spots.

In dispelling the great cloud of doubt that rolled up with the proposal of a Canadian pulp wood embargo the Committee for the Perpetuation of the Paper Industry in the United States deserves great credit, for it now seems evident that the embargo is not going to be put in force. Through the committee, made up of the most prominent and representative men in the industry, the State Department and the people were brought to realize the gravity of the situation and immediate action was taken.

At present there is nothing to disturb the equilibrium of the market so far as can be seen. There is one danger, however, and it seems appropriate to sound a note of warning at this time when all looks so bright.

It was the custom of the ancient Egyptians to put a death's head on their banquet tables so that they would be constantly reminded that all good things come to an end. It was a good tradition and it is well to think of dangers in times of plenty.

The one thing that can bring trouble is price inflation due to a growing demand. Everyone remembers the painful period of getting back to the normal in the post-war period and few can recall it with any particular pleasure. It was a trying situation for the industry with its uncertainty and its wobbly market.

Nothing can nip so quickly in the bud a nice healthy demand which the wise ones of the industry have been nurturing than crazy prices brought about by hysterically happy sellers. It withers suddenly over night without warning and leaves the foolish members of the trade scrambling around like ants looking for cover when their hill is kicked over.

AMERICAN BUSINESS NEED NOT WORRY

Perusal of the foreign news should convince the American business man who is prone to be pessimistic that America is singularly justified, at the present time, in facing the future with optimism.

With the rest of the world either involved in commercial upsets or confronted by industrial problems which are sinister in their aspect, American business is sound and unthreatened.

If business in this country is threatened by anything serious at the present time, pessimism is the thing. There is the type of business man who, in a period of unprecedented prosperity, would still spend his time looking for the dark cloud on the horizon. With nothing but blue sky visible to the naked eye he would still insist that the storm was about to break.

Pessimism raises more havoc with business than does the stock market fluctuations, strikes or new tariff schedules. Pessimism encourages business to meet trouble more than half way.

American business has no need to worry and that part of American business which is devoted to the paper industry probably has as little to worry about as any other line of industry. The trade has been passing through the summer doldrums—a period of general slowing down as inevitable as the summer itself but due entirely to natural conditions and not to any real undermining of the industry.

Paper men for the most part meet this period annually with a complacent smile. They have done so this year. They are already looking forward to the fall and predicting that business will be brisk and that the prosperous conditions which let up a trifle for the summer will be back again.

The PAPER TRADE JOURNAL shares the views of these optimists. There is every indication that their expectations will be realized and that business will boom again as its natural healthy condition dictates it must boom.

Throughout Europe, the story is quite a different one. Trade conditions are at a low ebb and one there must indeed be of a hopeful mind to face the future without something of fear and trembling. The American business pessimist should read the foreign news daily, acquaint himself with the conditions in the Nations abroad. It will broaden his perspective and, half unconsciously, will force him to admit that there is nothing the matter with American business after all.

PATERNALISM AND LABOR

Mr. C. E. Jackson, mill manager of the Consolidated Water-power and Paper Company, struck a fundamentally sound note when he condemned paternalism in the relationship between employers and employees in an address before the Rotary Club at Appleton, Wis.

There is no doubt that the average working man wants to be treated in an honest, straightforward, business-like manner by his boss. The attitude of many employers to patronize their men is, as Mr. Jackson says, a hazard to industrial democracy and offensive to the self-respecting craftsman.

The time for the paternal attitude has passed. It was a left over from the old apprentice system of the Middle Ages. Centralization and vastly increased production have made it impossible for the employer to regard those who work for him in the light of members of his family.

Annual Meeting of Northern Utilities

[FROM OUR REGULAR CORRESPONDENT.]

WATERTOWN, N. Y., July 30, 1923.—The annual meetings of stockholders and of directors of the Northern New York Utilities, Inc., were held Tuesday forenoon at the offices of the company. Not a change was made in the directorate nor in the list of officers. No other business was reported by President J. N. Carlisle.

The stockholders' meeting was held at 10 o'clock and resulted in the following elections: D. M. Anderson, C. C. Burns, F. L. Carlisle, W. P. Creager, H. G. Davis, W. K. Dick, F. A. Empsall, G. S. Knowlton, H. S. Lewis, R. B. Maltby, D. C. Middleton, G. A. Stebbins, B. B. Taggart, C. W. Valentine, T. J. Walsh, S. B. Wardell, J. J. Warren and M. S. Wilder.

The directors met at 11 o'clock and elected the following officers: J. N. Carlisle, president; C. C. Burns, H. S. Lewis, H. G. Davis and W. P. Creager, vice-presidents; Floyd L. Carlisle, chairman of the board of directors; S. F. Smith, secretary; R. K. Ferguson and E. D. Smith, assistant secretaries; F. A. Rogers, treasurer; R A. Ormiston, assistant treasurer; H. G. Davis, general manager of electric department; Peter Young, general manager of gas department; S. D. Gilbert, general manager of the financial department; F. L. Carlisle, J. N. Carlisle and C. C. Burns, executive committee.

Largest Raft of Pulpwood

[FROM OUR REGULAR CORRESPONDENT.]

APPLETON, Wis., August 1, 1923.—What is believed to be the largest raft of pulpwood ever transported across Lake Superior arrived at Ashland from Canada a few days ago for shipment to mills of the Consolidated Waterpower and Paper Company at Wisconsin Rapids, Biron and Appleton. The raft included 9,000 cords of spruce, cut on the company's extensive holdings in northern Ontario.

The raft was towed across the lake by the Consolidated tug, *Butterfield*, captained by Timothy Kelly of Manitowoc, a 74-year-old veteran lake captain, who came out of retirement to take charge of the Consolidated company's big boat. The *Butterfield* is said to be one of the largest tugs on the Great Lakes. The trip across the lake was made without incident. Shipment of the wood to the company's mills is to be started at once.

Swedish Cellulose Market Remains Steady

[FROM OUR REGULAR CORRESPONDENT.]

WASHINGTON, D. C., August 1, 1923.—The market for cellulose has continued steady since the settlement of the Swedish strike, in spite of many predictions to the contrary, according to the report from Consul General Snyder, at Christiania, just received by the Department of Commerce. The strongest demand has been for unbleached sulphite and kraft pulp, although there has also been a good market for the better qualities of bleached sulphite. There seems to be an unwillingness on the part of purchasers to contract for 1924 deliveries, buyers covering their requirements for short periods only, and this tendency has brought about a feeling of uncertainty. With the exception of easy bleaching sulphate, which declined 10 kroner, there has been no change in prices since last reported.

The factories manufacturing the less expensive grades of paper are well supplied with orders, although most of the producers of the finer grades of paper find it difficult to secure enough orders to keep their machines busy. The news print mills are generally well provided with orders, a number having already disposed of their 1923 production, and several others reported to have orders for some months ahead. Manufacturers of cap paper are also finding good markets for their product, and their prices have advanced. Interest is also manifested in kraft and greaseproof papers, especially on the part of European buyers, and while the market for thin printing paper cannot be characterized as brisk, a considerable number of orders have been received from China.

Paper Bids Received By Government

[FROM OUR REGULAR CORRESPONDENT.]

WASHINGTON, D. C., August 1, 1923.—The Government Printing Office has received the following bids for 40,000 pounds of chip board, 21½ x 32½—No. 70, and 40,000 pounds chip board, 28½ x 34½—No. 50:

United Paperboard Company, $53.90 per ton; and $53.90 per ton; R. P. Andrews Paper Company, $53.18; and $53.18; Mathers-Lamm Paper Company, $52.86; and 52.86; F. T. Parsons Paper Company, $53.80; and $53.80; The Whitaker Paper Company, $51.00; and $51.00; Barton, Duer & Koch Paper Company, $52.60; and $52.60; Dobler & Mudge; $54.60 f.o.b. Washington, and $54.60 f.o.b. Washington; Reese & Reese, $54.49 f.o.b. Washington, and $54.49 f.o.b. Washington; The Laboiteaux Company, $52.60 f.o.b. Washington, and $52.60 f.o.b. Washington; Philip Rudolph & Sons, Inc, $57.50; and $57.50; T. A. Cantwell and Company, $52.50; $59.50; and $52.50; $59.50; Knickerbocker Supply Company, $60.50 f.o.b. Washington, and $60.50 f.o.b. Washington.

The Printing Office has also received the following bids for 5,200 pounds blue writing paper, 22 x 34—26 No. 13: R. P. Andrews Paper Company, $0.105 per pound; the Aetna Paper Company, $0.1197; The Broderick Paper Company, $0.131; Old Dominion Paper Company, $0.1179; The Whitaker Paper Company, $0.20; Reese & Reese, $0.1279 f.o.b. Washington, and $0.1289, G.P.O., Dobler & Mudge, $0.249.

Other bids have been received as follows:

For 78,000 pounds white writing paper, 38 x 48—78 No. 16: R. P. Andrews Paper Company, $0.134 per pound; The Aetna Paper Company, $0.1397; Old Dominion Paper Company, $0.1549; The Whitaker Paper Company, $0.16; Reese & Reese, $0.1366 f.o.b. Washington; Whiting Patterson Company, $0.1475; Dobler & Mudge, $0.1325 f.o.b. Washington; Barton, Duer & Koch Paper Company, $.1145.

800 pounds white tissue paper, 20 x 30—8: R. P. Andrews Paper Company, $2.60; Whitaker Paper Company, $1.16 per ream, and $1.26; Old Dominion Paper Company, $1.14; G. G. Millar & Co., Inc., $2.14 f.o.b. Washington; Reese & Reese, $1.15 f.o.b. Washington, and $1.16 G. P. O.; The Broderick Paper Company, $1.935; Dobler & Mudge, $2.90; Wilkinson Bros. & Co., $1.50; and $1.96; and $2.58; F. A. Cantwell and Company, $1.18.

5,000 fine white writing envelopes, 4¼ x 7⅛, weight basis—17 x 22—500, 28 pounds: R. P. Andrews Paper Company, $11.00 per M; Whitaker Paper Company, $14.00; R. Carter Ballantyne, $6.24; Charles W. Beers and Company, $12.00.

20,000 pounds calendered tag board, 22½ x 28½—75, various colors and 15,000 pounds manila tag board, 22½ x 28½—75. The Whitaker Paper Company, $0.096; .095 (24 and 28.8 inch rolls): R. P. Andrews Paper Company, $0.0878; $0.0778.

The Government Printing Office will receive bids on August 3 for 10,000 pounds of white and yellow, No. 9 Bond paper, in 17 inch rolls and for 2,700 pounds of 22 x 28 inch white railroad board.

Eaton, Crane & Pike Co. Elect Officers

PITTSFIELD, Mass., August 1, 1923.—At the annual meeting of the Eaton, Crane & Pike Company, the following directors were elected to serve during the ensuing year.

Directors, Arthur W. Eaton, Winthrop M. Crane, Jr., William H. Eaton, Charles C. Davis, Z. Marshall Crane, Frederick G. Crane, Jr.; officers, Arthur W. Eaton, president; Charles C. Davis, vice-president; Winthrop M. Crane, Jr., vice-president; Charles B. Wheeler, vice-president; Harry D. Brigham, vice-president; William H. Eaton, treasurer; Arthur T. Spratlin, assistant treasurer; Robert E. Kinball, assistant treasurer; Frederick G. Crane, Jr., clerk.

The company is receiving a good summer business and looks forward with confidence to a satisfactory business in the fall.

Globe and Cylinder Rotary Bleaching Boilers
Digesters
Riveted Steel Tanks
Flumes, Smoke-stacks, Penstocks
General Steel Plate Construction of every description.

"Our Plant on Your Desk"

WE WISH we could personally conduct you through our plant and show you the sequence of operations in the making of Biggs Rotary Bleaching Boilers.

This very satisfactory procedure, in the majority of cases, is an impossibility.

Knowing this we have sought to bring our plant to you and literally place it upon your desk, for your leisurely inspection.

After a great deal of thought and close revision we have prepared a catalog whose pages take you along from one department to another, in an easy, informal manner. A real glimpse of production methods and Biggs "ideals."

After your "trip" you will find a mass of convincing testimonials and impressive installations. A pleasing exposition of the "why" of Biggs supremacy in the paper industry field.

A copy has been prepared for you and it would be a genuine pleasure to place "our plant on your desk."

Merely drop us a line—today!

The Biggs Boiler Works Company

Akron 20, Ohio

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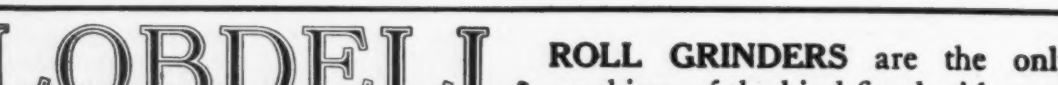
ROLL GRINDERS are the only machines of the kind fitted with automatic crowning device which develops a perfect crown without the use of a guide or former and repeated trying for the correct setting.



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LOBDELL Micrometer Calipers are handy and accurate.

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Section of the
Technical Association of the Pulp and Paper Industry

AN ORGANIZATION FOR THE ENCOURAGEMENT OF ORIGINAL INVESTIGATION AND RESEARCH WORK IN MILL ENGINEERING AND THE CHEMISTRY OF PAPER, CELLULOSE AND PAPER-MAKING FIBERS GENERALLY; IT AIMS TO PROVIDE MEANS FOR THE INTERCHANGE OF IDEAS AMONG ITS MEMBERS IN ORDER THAT PROCESSES OF MANUFACTURE MAY BE MADE MORE EFFICIENT AND IMPROVED ALONG TECHNICAL LINES.

Conducted by W. G. MacNAUGHTON, Secretary

SEED FLAX STRAW AS PAPERMAKING MATERIAL*

By Edward H. Kellogg, Associate Technologist; Merle B. Shaw, Associate Technologist; George W. Bicking, Paper Maker

I. Introduction

The United States produces approximately one and a quarter million tons of seed flax straw annually of which 80 per cent is a waste material. This fact has led to many attempts to utilize the straw as a raw material for paper making. In many instances the results of these experiments have been withheld from the public, while the published information upon the subject did not appear to justify the drawing of any definite conclusions regarding the practicability of using seed flax straw for paper making. It, therefore, seemed advisable that a careful study of this problem be conducted and the results made available to the industry.

The work of Jason L. Merrill[1] and others indicated that in order to secure a strong fiber of good felting properties the long bast fiber should be completely freed from the woody portion of the straw. Although Merrill[1] succeeded in making a good quality of fiber board from flax straw using the lime process, he did not succeed in the making of a first class wrapping paper. The failure apparently was due to the lime treatment not being sufficiently drastic to remove the short woody fibers, the presence of which weakens the sheet. It was thought that the sulphate process would be severe enough to eliminate the shives and at the same time not weaken the long bast fibers to the extent the soda or sulphate process would. A few preliminary tests with the sulphate process proved very satisfactory and it was, therefore, adopted for all subsequent trials.

Flax fiber from three sources was secured for the test, namely, (1) baled, thrashed, seed flax straw supplied by the Canadian Honorary Advisory Council for Scientific and Industrial Research; (2) a good quality of seed flax tow supplied by the Klearflax Linen Rug Company, of Duluth, Minnesota, and (3) a sample of what is thought to be fiber flax tow sent from Elk Mills, Maryland, by Mr. Wm. J. Robinson.

A small autoclave holding about one pound of the straw was used for the preliminary tests. The straw or tow was cut to about 1-inch lengths and hand screened, packed into the autoclave firmly and sufficient cooking liquor added to just cover the material. A gas burner was used to bring the charge up to the desired temperature (335°—340° F). The pulp was washed, bleached, and made into sheets on the suction mold. Three to four cooks were made in this manner with each of the three lots of flax fiber. The data secured in these tests were used to define the conditions of the larger scale cooks made in the rotary digester, which will be described more in detail.

Three autoclave cooks were made by a process somewhat similar to that covered by the Green Patent[2], which consisted in giving the moist straw a preliminary treatment with chlorine gas, followed by cooking with soda in the usual manner. It soon became apparent that the available equipment was inadequate for anything but the one pound autoclave cooks by this process and the resulting pulp was inferior to that obtained by the sulphate method. The experiments were discontinued too soon to draw any conclusions as to the merits of the process.

II. Pulp and Paper Making Tests with Whole Flax Straw

The whole flax straw was very chaffy and although it was thrashed previous to baling, it contained an appreciable amount of seed. To prepare the straw for pulping it was cut 1 to 2 inches in length in a No. 2 Daniel rag cutter and dusted in a Moore and White cylinder duster. The straw lost 51 per cent in weight by this process. The cut and dusted straw was packed into a Manitowoc experimental rotary digester of 15 cubic feet capacity and cooked by the usual or modified sulphate process. Three cooks were made with the whole straw, the details of which are recorded in Table 1.

In rotary cooks No. 130, and 131, the cooking liquor was com-

*This article is published by permission of the Director of the Bureau of Standards of the U. S. Department of Commerce.

[1]Utilization of American flax straw in the Paper and Fiber Board Industry, Jason L. Merrill, U. S. Department of Agriculture, Bulletin No. 322.

[2]Herman G. Green, Process of Treating Vegetable Fibers, U. S. Pat. No. 1,206,777, Nov. 28, 1916.

TABLE 1—PULPING OF WHOLE FLAX STRAW

Rotary cook No.	Furnish: Air-dry straw lb.	Furnish: Equivalent bone-dry lb.	Chemicals added: NaOH %	Chemicals added: Na_2S %	Cooking time, min.	Maximum cooking temperature, °F.	Pulp yield: % air-dry furnish	Pulp yield: % bone-dry furnish	Pulp yield: % original air-dry whole straw
130*	78.5	74.3	12.36	12.80	100	335	38.2	40.5	18.7
131	78.5	74.3	11.92	12.34	275	340	36.3	38.7	17.8
132	70.0	65.1	19.20	5.89	285	340	35.2	37.9	17.2

*Steam shut off, digester not relieved or opened until 30 hours later.

posed of about equal weights of Na_2S and NaOH which is a modification of the usual sulphate process in which the cooking liquor consists of about 3 parts NaOH to 1 of Na_2S. By making this modification it was thought that it would be possible to remove the woody material without weakening the bast fibers to the extent that a cooking liquor strong in caustic would. Since this did not prove to be the case, No. 132 was cooked with the regular sulphate cooking liquor. About 6 pounds of cooking liquor was used to each pound of straw. The cooking was accomplished by direct admission of steam into the boiler.

Cook No. 130 was allowed to stand for thirty hours after the steam was shut off without relieving the steam. With No. 131 and 132, the relief valve was opened immediately upon shutting off the steam; a half to three-fourths of an hour being required to bring the pressure in the rotary to zero. After which the cooking liquor was drained into the sewer over night and the stock transferred to a 50 pound beater the following morning for washing and preparation for the paper machine. The beater record is shown in the above table.

The washing and bleaching of the stock was all done in the beater. A 60-mesh wire was used on the cylinder of the washer. It is probable that a 40-mesh wire could have been used to better advantage, which, in addition to permitting of a more rapid washing of the stock, would have removed more of the undesirable short woody fibers. The pulp from cooks No. 130, and 131, which was cooked with liquor high in sodium sulphide, was slimy and more difficult to wash than No. 132, which was cooked by the usual sulphate process.

A. D. Little, Inc.,[3] found that a cooking liquor high in sulphides was superior to the usual sulphate liquor for pulping flax straw.

The pulp from the whole straw was prepared with a view to using it in an attempt to make a strong wrapping or bag paper similar to kraft. The fiber was accordingly given a moderate beating only, in order not to shorten the fiber too much. Upon completion of beating, the stuff was dropped to a chest from which it was pumped to the paper machine. The jordan was set to give the stock a good brushing. The screens in front of the machine were bypassed in order not to remove any of the long fibers. The paper machine data are given in Table 3.

The stock for machine runs No. 182, and 183, was slow, inclined to foam, and did not feed into the jordan properly. This stock was derived from cooks No. 130, and 131, in which the liquor high in sodium sulphide was used. The hydration of the stock was also apparent in the finished paper.

An excellent sheet of paper was produced in run No. 184, the stock was much freer than with No. 182, and 183, and gave no trouble either in the jordan or on the wire, although it was inclined to foam somewhat. The pulp for this run was prepared by the usual sulphate process. The results of these three runs emphasize the necessity of freeing the bast fiber of all the woody short fibers, and this can best be accomplished by the unmodified sulphate process.

The physical and chemical test upon the paper are given in Table 4.

The physical tests in general do not indicate that papers No. 182, and 183, are inferior to No. 184; however, the hydrated appearance and rattle of No. 182, and 183, would condemn them if they were to be placed upon the market, while No. 184 has the feel and appearance of a No. 1 kraft sheet. In commercial practice the bursting strength is the principal test to which kraft paper is subjected. A good kraft paper should test a point per pound on a 24 x 36, 500 basis, viz., a paper of which 500 sheets 36 inches long and 24 inches wide weighs 50 pounds should have a bursting strength of 50 points. Although the bursting strength averaged about 15 per cent below a point per pound, it is reasonably certain that when the optimum conditions for handling the pulp have been worked out, the paper can be made to test a point per pound on a 24 x 36, 500 basis.

TABLE 2—BEATER RECORD

Pulp from cook No.	Furnish: Moist pulp, lb.	Furnish: Equivalent bone-dry, lb.	Pulp washed: Water, cu. ft.	Pulp washed: Time	Bleach added % bone dry furnish	Size added % bone dry furnish	Alum added % bone dry furnish	Total time stock in beater, hr.
130	303	30.0	140.9	4 hr.	7.43	2.5	4.2	27¾
131	183	28.4	132.4	3 hr. 35 m.	....	2.3	3.5	47
132	156	24.3	113.0	3 hr. 20 m.	....	3.0	4.1	25

TABLE 3—PAPER MACHINE DATA

Machine run No.	Pulp from cook No.	Speed of machine, ft./min.	Distance between deckle, in.	Width of roll, in.	Shrinkage: in.	Shrinkage: %	Paper produced: Broke, lb.	Paper produced: Paper, lb.
182	130	27-30	18⅜	16½	1⅜	8.91	10.0	15.0
183	131	25-27.5	18⅛	16½	1⅜	8.91	10.4	15.9
184	132	24-25	18⅛	16⅞	1¼	7.41	6.5	17.0

III. Bleached Paper from Flax Straw

In order to make a strong, white sheet of paper, free from shive, it was thought that it would be advantageous to remove as much of the woody material from the straw as possible by mechanical means previous to chemical treatment, thereby reducing the chemical consumption and permitting of a milder cook. If it becomes necessary to resort to too drastic a cook to remove the shives, the true bast fiber is weakened at the same time and will not make a strong paper.

Flax tow similar to that used for upholstery, and insulating purposes, which already has a considerable portion of the woody material removed, was used for the experiments upon bleached paper

TABLE 4—PHYSICAL AND CHEMICAL TESTS

Mach. run No.	Weight of sheet (25x40, 500), lb.	Bursting strength pts.	Thickness, in.	Ratio bursting strength to weight (25x40, 500), %	Folding endurance. No. of double folds: Mach.	Folding endurance. No. of double folds: Cross	Breaking length in yards: Mach.	Breaking length in yards: Cross	Tearing, g.	Ash, %	Total resin, %
182	63	46	0.0035	73	850	364	7,960	4,080	84	2.1	3.4
183	45	35	0.0025	78	83	332	9,440	4,350	57	1.7	1.1
184	62	44	0.0035	71	362	308	8,475	4,580	86	2.1	2.1

[3]Taken from an unpublished report received from A. D. Little, Inc.

This tow, however, was subjected to additional mechanical treatment, previous to cooking, to remove still more of the woody material. The treatment for the various cooks is shown in Table 5.

TABLE 5—TREATMENT FOR THE VARIOUS COOKS

Tow for cook No.	Tow used	Mechanical treatment	Loss due to treatment, %
125	Robinson	Cut, dusted and screened twice	35.6
126	Klearflax	Twice through cotton picker, dusted and screened	42.8
127	Klearflax	Twice through cotton picker, dusted once	41.2
128	Klearflax	Cut and dusted once	25.2
129	Klearflax	Twice through cotton picker, dusted once	41.2
133	Klearflax	Cut and dusted once	30.2
134	Klearflax	Cut and dusted once	30.2

too dilute a cooking liquor, resulted in the tow not being sufficiently reduced at the end of 7 hours. At this point the cooking liquor was drained off, reducing valve removed, a more concentrated cooking liquor added and the cook continued for 3¼ hours additional. It was realized that the first cook would be largely preliminary, for which reason the Robinson tow was used in order to conserve the Klearflax tow, the source of which was known, for more exact test. It was found that about 6 pounds of cooking liquor to 1 pound of furnish gave satisfactory results, which ratio was maintained for all succeeding cooks.

The best paper was made from cooks No. 126, and 133. Cook

TABLE 6—COOKING RECORD

Rotary cook No.	Furnish: Air-dry treated tow, lb.	Furnish: Equivalent bone-dry, lb.	Chemicals: NaOH %	Chemicals: Na_2S %	Cooking time, hr.	Max. cook. temp., °F.	Air-dry furnish, %	Bone-dry furnish, %	Orig. air-tow	% whole straw used on 25% yield
125	59.2	55.4	.....	....	....	337	44.59	47.65	28.73	7.13
126	70.3	65.2	19.54	7.37	4.25	333	49.00	52.84	28.03	7.01
127	70.0	64.4	19.41	7.31	6¼	335	53.60	58.20	31.50	7.87
128*	85.0	78.4	17.80	7.46	3.75	338	58.35	63.14	43.66	10.91
129	71.6	68.9	13.90	14.80	3½	335	46.90	48.70	27.50	6.88
133	65.3	61.3	19.59	6.00	4.00	335	57.90	61.70	40.40	10.10
134	82.5	77.55	20.20	6.52	5.25	340	48.90	51.90	34.10	8.50
Average							51.30	54.90	33.42	8.30

*The sample of pulp for moisture determination was not taken in the usual manner and pulp yield is likely too high.

We have been unable to secure authentic data regarding the source of the Robinson tow. It is probably derived from fiber flax, rather than seed flax straw. Since this information was lacking, only one run was made with it. The Klearflax tow was made from thrashed seed flax straw. The cotton picker was made available through the courtesy of the Textile Section. It is used to remove foreign matter such as wood, fragments of the cotton

No. 129 was made with a modified sulphate cooking liquor in which the sodium sulphide was slightly in excess of the caustic. The resulting pulp was of poor quality and inclined to be slimy. As with the whole straw, it was found that the best paper resulted from a well cooked stock. This is true, however, only within certain limits. Cook No. 134 was prolonged for 5¼ hours. The stock was, of course, free from woody material, but the severity

TABLE 7—BEATER TREATMENT

Pulp from cook No.	Furnish: Moist pulp, lb.	Furnish: Equivalent bone-dry, lb.	Pulp washed: Water, cu. ft.	Pulp washed: Time, hr.	Bleach % bone-dry furnish	Size % bone-dry furnish	Alum % bone-dry furnish	Paper blue, g.	Cone H_2SO_4 cc.	Total time stock in beater, hr.
125	207.4	26.0	194.8	3.0	3.42	...	...	...	..	52.0
126	289.9	34.0	162.7	2.5	4.60	...	...	...	9	51.1
127	155.0	37.0	144.0	3.0	6.24	2.5	3.4	...	9	47.5
128	240.0	49.1	155.7	3.8	5.16	2.5	3.8	0.40	9	51.6
129*	173.5	33.3	147.1	2.7	9.60	3.0	4.5	.40	9	45.0
133*	219.0	37.2	64.5	1.5	7.85	2.3	3.4	.65	10	28.5
134*	214.5	39.8	88.8	1.8	7.60	2.2	3.1	.40	35	28.0

*Washed three times (about 15 cu. ft. of water) in rotary.

hulls, etc., from raw cotton. It removed a considerable portion of the woody material from the tow, but the screenings contained an appreciable amount of fiber. Subsequent trials indicated that it would be more satisfactory to simply cut and dust the tow as was done with the whole straw. The cooking record is given in Table 6.

Cook No. 125 was made in two stages. This being the first cook

of the cook had weakened the bast fiber to such an extent that it was not possible to make a strong sheet of paper with it.

The treatment in the beater is shown in Table 7.

The stock bleached easily, but the color did not hold up very well when run over the paper machine. To overcome this a small amount of blue dye was added to Nos. 128, 129, 133, and 134. Pulp prepared from flax fiber is much "slower" than wood pulp and

TABLE 8—PAPER MACHINE RECORD

Mach. run No.	Pulp from cook No.	Speed of mach. ft./min.	Distance between deckles, in.	Width of roll, in.	Shrinkage: In.	Shrinkage: %	Paper produced: Broke, lb.	Paper produced: Paper, lb.
176	125	34	18	17.5	0.5	2.8	6.8	11.6
177	126	36-37	18	17.0	1.0	5.6	9.0	21.6
178	127	35-36	18	17.4	0.6	3.3	9.0	22.0
179	128	33-35	18	17.1	0.9	5.0	4.4	27.0
181	129	39-40	18.2	17.5	0.7	3.8	14.1	12.1
185	133	29-33	18.1	16.9	1.2	6.6	11.6	18.7
186	134	26-32	18.1	17.4	0.7	3.9	8.5	21.0

made in the rotary digester. After the cook was under way it was found to be impossible to obtain a temperature in the rotary above 258° F., although there was 100 pounds steam pressure in the main line. This was due to the presence of a reducing valve in the line which had not been taken into consideration when the cook was started. The low cooking temperature, combined with

hydrates quickly. The washing and bleaching should be completed as soon as possible in order not to keep the stock in the beater long enough to overhydrate it. The same is true of the beating, although if the beater roll is let down too rapidly the fiber is shortened before it has been properly brushed out.

The paper machine record is given in Table 8.

The jordan was set to give the stock a good brushing in each case. The stock was screened on plate screens of 0.018-inch cut before going onto the machine. Little difficulty was experienced in making the runs.

The physical and chemical tests upon the paper are recorded in Table 9.

It was found to be very difficult to prepare a sheet of white paper free from specks. The specks were not due to shives or any organic matter inherent in the straw. The principal sources of specks were from the rubber gaskets used on the rotary digester and from the 50-pound beater, which proved a continuous source of small particles of wood, paint, and iron oxides. The flax tow also contained some dirt which was not entirely removed by dust-

chemicals consumed in the cooking process, since the cooking was done by direct admission of steam into the digester. The extent to which the cooking liquor was diluted by the condensed steam has not been determined. In calculating the results of the analyses, an allowance of 160 pounds was made for condensed steam. The theoretical amount of steam required to raise the cooking liquor to the maximum cooking temperature of about 140 pounds, not allowing for radiation. The digester is well insulated and 20 pounds was arbitrarily allowed for radiation. If 460 pounds of liquor were used for a given cook, it was assumed that there were 620 pounds of liquor in the digester at the end of the cook. This makes no allowance for the steam evaporated upon relieving the digester. The results, we believe, are accurate within 10 per cent.

TABLE 9—PHYSICAL AND CHEMICAL TESTS

Mach. run No.	Weight of sheet (25x40, 500), lb.	Bursting strength, pts.	Thickness, in.	Ratio bursting strength to weight (25x40, 500) %	Folding endurance No. of folds		Breaking length in yards		Tearing, g.	Ash, %	Total resin, %
					Mach.	Cross	Mach.	Cross			
176	44	19	.0030	42.5	6	10	5,349	3,060	74	1.6	0.2
177	60	34	.0040	56.8	461	676	6,890	3,512	178	1.6	0.1
178	48	21	.0035	43.8	22	43	5,160	3,568	112	1.3	2.4
179	54	31	.0040	57.4	163	183	6,795	4,245	149	1.6	5.2
181	42	13	.0030	31.0	2	5	5,085	3,635	34	1.8	3.7
185	54	37	.0035	68.6	363	258	8,720	5,210	74	2.0	2.8
186	62	23	.0045	37.1	4	7	5,420	3,155	43	1.7	3.0

ing. In commercial practice the first two sources of specks would be negligible. Flax tow prepared especially for papermaking purposes could doubtless be so handled as to materially reduce the amount of dust and foreign matter contained therein. For some reason, not yet fully determined, the blue dye added to machine runs No. 179, 181, 185, and 186, contributed many blue specks, particularly in run No. 186. The dye used was a DuPont paper blue, which had been used without trouble for other grades of paper. It is interesting to note that the paper from machine run No. 181 is very weak, having a folding endurance of 2 in the machine direction and 5 in the cross. The pulp for this paper was cooked by the modified sulphate process in which the sodium sulphide in the cooking liquor was slightly in excess of the sodium hydroxide.

The pulp for run No. 186 was given a drastic cook of 5¼ hours

TABLE 10—APPROXIMATE CHEMICAL CONSUMPTION

Cook No.	Material used	NaOH consumed per lb. of pulp		Na_2S consumed per lb. of pulp		Total chemical consumed per lb. of pulp	
		lb.	%	lb.	%	lb.	%
125	Robinson tow.	....	....	....	....	....	....
126	Klearflax tow.	0.189	18.9	0.150	15.0	0.339	33.9
127	Klearflax tow.	.218	21.8	.137	13.7	.335	35.5
128	Klearflax tow.	.231	23.1	.048	4.8	.279	27.9
129	Klearflax tow.	.144	14.4	.316	31.6	.460	46.0
130	Whole straw..	.271	27.1	.332	33.2	.603	60.3
131	Whole straw..	.298	29.8	.338	33.8	.636	63.6
132	Whole straw..	.462	46.2	.167	16.7	.629	62.9
133	Klearflax tow.	.269	26.9	.104	10.4	.373	37.3
134	Klearflax tow.	.248	24.8	.134	13.4	.382	38.2

to determine the cooking limits. It is evident that the bast fiber was weakened by the severity of the cook.

Run No. 176 was made from the Robinson tow pulp, which may be fiber flax. The irregularity of the pulping process, explained in the discussion of Table 6, doubtless partially accounts for the low tests of this paper.

The most satisfactory paper from the standpoint of general appearance, feel and physical tests was made in run No. 185, with No. 177 a close second. If free from specks, these two papers would meet the requirements of a good grade of writing paper. The color is not quite up to standard, but this could be remedied by carrying the bleaching a little farther.

IV. Chemical Consumption

It was not possible to make an accurate determination of the

Table 10 shows the approximate chemical consumption for both the whole straw and tow.

The chemical consumption in cook No. 125 was not determined, due to the irregularity of the cooking process. The low chemical consumption shown for No. 128 must be accepted with caution; as pointed out previously, the pulp yield was not accurately determined for this cook.

As was expected, the chemical consumption for the whole straw was much higher than for the tow cooks, in which a large amount of the woody material was removed by mechanical means previous to cooking.

Sutermeister[4] states, "The alkali required in making kraft fiber is said to be 640 pounds per ton of pulp." This statement refers to wood and is equal to 32 per cent. From Table 10 it can be seen that the chemical requirements for a good quality of flax tow are not greatly in excess of the amount required for wood, while the whole straw consumes about double this amount.

The high chemical consumption in No. 129 is a result of the previously mentioned, modified cooking process. With the whole straw the chemical consumption was practically the same in all three cases, although cooks No. 130, and 131, were made with the high sulphide cooking liquor and No. 132 by the usual process.

The presence of large amounts of silica in sulphate cooking liquors interferes with the recovery of the liquor. Considering the high silica content of cereal straws, it seemed probable that flax straw would also show a high silica content. To test this, four samples of straw were ashed and analyzed for SiO_2. The spent cooking liquor was also analyzed for SiO_2. From Table 11 it can be seen that the silica in the cooking liquor is not present in large enough quantities to be of any consideration.

TABLE 11

Liquor from cook No.	Silica found % of ash
125	0.44
126	0.34
127	0.37
128	0.20
129	0.71
130	0.54
131	0.41
132	0.36
134	0.27

Nos. 130, 131, and 132 were from the whole straw cooks, which explains the higher SiO_2 content. The whole flax straw was found to have an ash content of 2.85 per cent of the weight of the bone dry straw. The ash analyzed 2.72 per cent SiO_2.

[4]Sutermeister, Chemistry of Pulp & Paper Making, p. 142—1920 edition.

V. Commercial Pulping Tests

In order to determine the effect of cooking flax straw in large quantities, arrangements were made with the Jaite Company, of Jaite, Ohio, to make some experimental cooks, using the commercial equipment that was there available for the sulphate process. Although it was thought somewhat doubtful that the cooked stock could be blown from an upright type of digester, it was nevertheless planned to make a few cooks, in order to obtain yield and cost data and to determine the suitability for flax straw of the usual equipment available for cooking wood by the sulphate process.

The digester used was of the usual, vertical type, designed for the cooking of wood by the sulphate process. The cooking was accomplished by indirect steam similar to the Morterud process, the liquor being circulated through a heater. Due to the nature of the fiber it was impossible to blow the stock into the diffuser upon completion of the cook. This necessitated the picking of the stock out of the digester by hand. With the exception of cook No. 1, which was washed in the diffuser, the stock was washed in the digester. The mill was equipped with a bucket elevator to carry the stock from the diffuser pit to the wet machine. The long flax fiber balled up on the chain and buckets and could not be elevated in this manner. The use of the wet machine was abandoned and the stock spread upon steam pipes to dry. The dried stock was baled for shipment to Washington. It was impossible to get a clear water for the washing of the stock due to continual rains which kept the creek from which the water was taken at floodstage. As a result, a certain amount of silt and clay was retained by the pulp.

The fiber used in the test consisted of 6 tons of whole, thrashed, seed flax straw, secured from Schleuter and Abrahams, of Winthrop, Minn., at $9 per ton, f.o.b. Winthrop, and 3½ tons of baled, extra fine seed flax tow, secured from the Atlantic Excelsior Manufacturing Company, at $80 per ton, f.o.b. Chicago, plus a charge of $2.50 per ton for burlap, wrapping the bales. The whole straw was damp, rather dark, and weathered in appearance, also somewhat moldy. The tow was bright in color and of good quality. The manufacturers state that it requires about 3 tons of whole straw to produce 1 ton of the tow. The straw ran 30.6 per cent moisture and the tow 16.0 per cent. The straw and tow were cut into about 1 inch lengths in a Daniel rag cutter and dusted in a devil duster previous to cooking, with results as shown in Table 12.

TABLE 12—CUTTING AND DUSTING LOSS

Material	Weight before cutting and dusting, lb.	Weight after cutting and dusting, lb.	Loss by cutting and dusting, lb.	Loss by cutting and dusting, %
Whole straw	11,476	5,566	5,910	51.5
Tow	6,989	5,825	1,164	16.7

Four cooks, in all, were made, two with the whole, thrashed seed flax straw, and two with the extra fine seed flax tow. Cooks No. 1 and 2 were with the whole straw, and cooks No. 3 and 4 were made with the tow. The cooking data are given in Table 13.

The liquor for cooks No. 1, and 2, was prepared by diluting the required amount of white liquor with black liquor from a previous cook, this being the usual mill procedure. As it was desired to bleach the pulp from cooks No. 3, and 4, water was used instead of black liquor in diluting the white liquor. The data in connection with the preparation of the cooking liquor are given in Table 14.

TABLE 14—PREPARATION OF COOKING LIQUORS

Cook No.	White liquor used, liters	Black liquor used, liters	Water used, liters	Water in furnish, liters	Total liters	Cooking liquor per lb., bone-dry furnish, liters
1	2,145	6,105	.....	297	8,547	5.8
2	3,465	7,260	.....	477	11,202	4.7
3	2,640	.....	5,610	203	8,453	3.6
4	2,640	.....	5,610	221	8,471	3.3

Two attempts were made to blow the first cook. It was found that the stock was under cooked at the time the first attempt was made to blow. More cooking liquor was added to make up for that lost in blowing and the cooking was continued for an additional 45 minutes, after attaining 80 pounds' pressure. There was a small loss of pulp during this first cook, due to the effort to handle it on the elevator, etc. The yield of pulp, based upon the original whole straw and tow, is given in Table 15.

TABLE 15—YIELD OF PULP PER CENT

Cook No.	Furnish cut and dusted material	Original air-dry whole straw	Original bone-dry whole straw	Original air-dry tow	Original bone-dry tow
1	Whole straw....	14.7	21.2	....	....
2	Whole straw....	15.5	22.5	....	....
3	Tow	....	12.2*	30.8	36.7
4	Tow	....	15.4*	36.5	46.2

*Based on the assumption that 3 tons bone-dry straw produces one ton of bone-dry tow.

TABLE 16—APPROXIMATE CHEMICAL CONSUMPTION

Cook No.	Material cooked	Analysis spent liquor, g. per l. NaOH	Analysis spent liquor, g. per l. Na_2S	Volume* cooking liquor, liters	Chemicals consumed NaOH lb.	Chemicals consumed Na_2S lb.	Chemicals consumed Total lb.	Bone-dry pulp produced, %
2	Whole straw.	13.6	16.2	10,102	478.3	271.5	749.8	68.0
3	Tow	11.72	10.70	7,553	254.0	182.0	436.0	42.3

*The volume of cooking liquor was calculated as follows:

No. 2—		No. 3—	
477	liters in straw	203	liters in tow
10,725	liters added in cooking liquor	8,250	liters added
11,202	total	8,452	liters total
1,100	liters lost (allowed in blow)	900	liters lost
10,102	liters net	7,553	liters net

TABLE 13—COOKING DATA

Cook No.	Furnish, pounds cut and dusted material: Air-dry material, lb.	Furnish, pounds cut and dusted material: Bone-dry material, lb.	Active chemicals in cooking liquor: NaOH lb.	Active chemicals in cooking liquor: Na_2S lb.	NaOH and Na_2S: lb.	NaOH and Na_2S: Air-dry furnish, %	Time of cooking at 80 lb. or above minutes	Pulp bone-dry yield: lb.	Pulp bone-dry yield: Air-dry furnish, %	Pulp bone-dry yield: Bone-dry furnish, %
1	2,136	1,482	439.8	377.5	817.3	38.7	45	648	30.3	43.7
1	.....	.....	204.4	175.8	380.2	17.8	45	...	....	....
Total			644.2	553.3	1,197.5	56.5	90	...	....	....
2	3,430	2,380	781.3	631.5	1,412.8	41.2	120	1,102	32.1	46.3
3	2,786	2,340	449.0	360.0	809.0	29.0	225	1,031	37.0	44.0
4	3,039	2,553	497.6	377.4	875.0	28.8	210	1,417	46.6	55.5

It was difficult to determine the amount of chemicals actually consumed in the cooking process. The cooking liquor was concentrated as the result of a mild relief, which was maintained throughout the cook and was materially concentrated by evaporation when attempting to blow, the pressure being reduced from around 90 to 0 pounds pressure in about 15 minutes. The most reliable data for chemical consumption was obtained in cooks No. 2 and 3, which data are given in Table 16.

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It is to be remembered that it was found necessary to wash the stock in the digester and then dry it on steam pipes, bale it and ship to Washington for papermaking trials. Under these conditions the shives became hard to such an extent that they could not be separated in the beater from the fiber. Under the conditions of the experimental cooks at the Bureau of Standards, the cooked stock was transferred immediately to a washer without drying. Under such conditions the soft shives were easily broken up and washed out, giving a clean sheet on the machine. This was particularly true when the stock was bleached, since less than 10 per cent of 35 per cent bleaching powder was necessary for the stock cooking in the small rotary digester, while an average of over 13 per cent of bleach was necessary on the stock pulped at Jaite. It is believed, however, that a stationary vertical digester could be used successfully if the blow valve opening were of large diameter.

VI. Papermaking from Mill Pulping Tests

On receipt of the dried and baled stock at the Bureau, a series of runs was made, both with the whole straw and with the tow. The stock was given an additional washing treatment in the beater and in some cases it was bleached, the bleaching being done in the beater. The unbleached pulp was used to make wrapping paper, while the bleached pulp went into writing paper. The data in regard to manufacture are given in Table 17.

TABLE 17—MANUFACTURE DATA

Machine run No.	Jaite cook No.	Stock furnished dry	% bleach (35%)	% size	Total* time in beaters, hr.	% shrinkage on wire
Whole Flax Straw—Unbleached						
230	1	185	....	..	13.6	6.4
231	1	249	....	..	15.1	6.9
232 A	1	241	....	2	15.0	6.9
232 B	1					
233**	2	188	....	2	12.3	5.9
Flax Tow—Unbleached						
234 A	3	204	....	2	17.8	6.9
234 B	3					
243	3 & 4	208	....	3	16.6	4.9
244	4	213	....	3	15.7	3.2
Flax Tow—Bleached						
235	3	148	16.1	2	23.3	5.7
238	4	158	13.2	3	19.0	3.7
239	3 & 4	139	15.0	3	14.7	5.2
240	3 & 4	208	12.1	3	20.0	4.7
241	3 & 4	213	11.0	3	24.8	4.7
242	3 & 4	216	12.0	3	17.7	5.5

*Includes washing, bleaching and beating.
**Machine run No. 233 represents an attempt to recook the stock in the rotary boiler with the usual sulphate liquor.

The appearance of the paper made from the pulp of cooks No. 1, and 2, was not as good as in the case of machine run No. 184, of the preliminary work. These runs, No. 230, 231, and 232, did not equal in strength the paper made from the stock cooked in the rotary boiler. This is evident from a careful comparison of the test data in Table 4, and Table 18, given below. It is probable, however, that this difference is due to the fact that the cooked stock was not thoroughly washed before being dried, because of the dirty water available at Jaite at the time of the cooks, and because the original whole flax straw used was not so good nor so clean as that used in the rotary cooks at the Bureau. Run No. 233 represents an attempt to eliminate more of the straw fiber by an additional cooking treatment in the rotary boiler, in order to get a cleaner and stronger sheet. This seemed to weaken the stock, but the sheet was somewhat cleaner.

Paper machine runs No. 234, 243, and 244 were made with the unbleached stock from cooks No. 3, and 4. A comparison of the test data in Table 18 indicates that the paper from these runs was not so strong as that from runs No. 230 and 233, inclusive. It is difficult to account for this, as the microscopic analysis of the paper indicate a very much higher proportion of bast fiber than in the paper made from the whole straw. The appearance of these sheets was, however, very much better than in the case of runs No. 230 to 233, inclusive, and the paper was much more free from the large particles of dirt found in those sheets made from the whole straw. In this case also, it is believed, that a better sheet could be obtained if the stock could have been completely washed and beaten without having been dried for shipment.

It was believed possible to obtain a white writing or bond paper from the flax tow from cooks No. 3, and 4, to duplicate the paper made in machine runs No. 185, and 177, at the Bureau. Paper machine runs No. 235, and 238 to 242, inclusive, represent this attempt. The paper was not as clean as that from the rotary cooks and contained dirt which was obviously not shives nor from the tow itself. Some of this may have been due to particles of seeds from weeds or careless handling of the straw and tow. The paper was fairly strong, as the test data in Table 18 indicate, but did not compare in strength with that made from a good grade of rags. It is probable that a much better sheet could be made from flax tow by using the sulphate cooking process, if the tow were cooked in rotary boilers and washed thoroughly before the shives and dirt had a chance to become hard. It was not possible to continue this work, but it is believed that a good clean sheet of writing or bond paper of considerable strength could be successfully produced from a good grade of flax tow.

The fact that it was not possible to handle the stock in the regular manner prohibits the calculation of exact cost data. It seems probable that the best way to handle the flax would be to cook it in a rotary digester, designed for use with the sulphate process, dumping the rotary direct into a diffuser so that the cooking liquor could be washed out and saved for recovery, and washed stock transferred direct to beaters for papermaking purposes.

TABLE 18—PHYSICAL AND CHEMICAL TEST DATA

Mach. run No.	Weight of Sheet (25x40, 500) lb.	Bursting strength pts.	Thickness in.	Ratio bursting strength to weight (25x40, 500) %	Folding endurance		Breaking length in yards		Tearing g.	Ash %	Total resin %
					Mach.	Cross	Mach.	Cross			
Whole flax straw—unbleached											
230	99	63	0.0060	64	1,568	1,234	7,028	3,862	193	3.9	0.6
231	90	67	.0050	74	964	964	8,380	5,280	126	3.4	0.5
232A	90	67	.0050	74	1,136	876	9,950	4,705	131	3.5	1.7
232B	103	61	.0060	59	1,083	925	7,490	3,900	194	3.7	1.7
233	104	59	.0065	57	284	197	6,301	4,025	130	3.9	1.7
Flax tow—unbleached											
234A	96	68	.0055	71	2,171	2,850	7,410	4,320	192	2.3	1.4
234B	56	44	.0030	79	1,173	652	8,290	4,495	99	2.3	1.5
243	53	35	.0035	66	291	285	7,312	3,515	98	2.4	2.6
244	58	30	.0040	52	180	168	5,715	3,237	96	2.2	2.7
Flax tow—bleached											
235	56	34	.0030	61	143	97	7,810	3,882	70	2.1	1.1
238	55	30	.0035	55	37	81	8,880	4,240	72	2.8	1.9
239	56	21	.0035	38	2	4	5,050	3,963	37	2.0	2.7
240	56	29	.0035	52	32	53	7,305	3,655	64	1.8	2.8
241	56	29	.0035	52	31	35	4,430	2,630	64	1.8	2.6
242	57	20	.0035	35	5	8	3,948	2,482	42	2.2	2.3

VII. Economic Considerations

The acreage of seed flax grown in the United States for the years of 1916 to 1920, inclusive, is given in Table 19.

TABLE 19

Year	Acreage (1)	Straw produced, tons (2)
1916	1,474,000	1,105,000
1917	1,984,000	1,488,000
1918	1,910,000	1,432,500
1919	1,572,000	1,179,000
1920	1,785,000	1,338,750
Average	1,745,000	1,308,750

(1) U. S. Department of Agriculture, year book 1920.
(2) Calculated upon the basis of ¾ of a ton of straw per acre.

The acreage of seed flax by states for the year of 1920 is given in Table 20.

TABLE 20

State	Acreage (1)	Straw produced, tons (2)
North Dakota	735,000	551,250
Montana	451,000	338,250
Minnesota	320,000	240,000
South Dakota	220,000	165,000
Kansas	23,000	17,250
Iowa	12,000	9,000
Wisconsin	9,000	6,750
Missouri	6,000	4,500
Nebraska	5,000	3,750
Wyoming	4,000	3,000
Total	1,785,000	1,338,750

(1) U. S. Department of Agriculture year book, 1920.
(2) Calculated upon the basis of ¾ of a ton of straw per acre.

A small portion of the straw, estimated to be about 15 per cent, is used in the manufacture of tow for upholstery, and insulating purposes, and also for packing fragile articles for shipment. The farmer uses a small amount for feeding and bedding of stock. It is conservatively estimated that 80 per cent of the straw is burned. The production of flax straw in Canada amounts to about 750,000 tons annually. G. G. Ommanney, of the Department of Colonization and Development of the Canadian Pacific Railway, has conducted a survey of the flaxgrowing regions of Canada. He estimates that approximately 50 per cent of the straw grown within a ten-mile radius of a shipping point could be readily obtained.

Although it is probable that the technical difficulties involved in the use of the sulphate cook for flax straw can readily be solved, it is extremely doubtful that this process could be used on account of economic considerations. Table 21 represents the average yield at the various steps in per cent.

TABLE 21
Yield—Per Cent

	After cutting and dusting	After cooking and washing	Paper unbleached	Paper bleached
Whole flax straw	48.5	21.9	17.7	...
Flax tow	83.3	41.4	36.8	34.4
*Flax tow on basis of whole straw	27.8	13.8	12.3	11.5

*Assuming that it requires 3 tons of whole straw to make 1 ton of tow.

Flax straw at the present time sells for around $9 per ton, f.o.b. shipping point in the flax growing regions. It requires about 6 tons of straw to produce 1 ton of pulp suitable for wrapping paper. Allowing $5 per ton for freight on the straw, this would represent an initial cost of $84 for straw for 1 ton of pulp. Against 2½ cords of wood for 1 ton of pulp at $12 per cord would represent $30, a difference of $54 per ton in favor of wood. It is roughly estimated that the cost of handling the straw in the mill (cutting and dusting) would about equal the cost of shipping and barking the pulp wood. The chaff from the straw, however, has some value as a stock food or can be used for fuel. The bark, of course, has no food value. The chemical consumption per pound of pulp produced is about double for straw that it is for wood. The time required for cooking flax straw is somewhat less than for wood.

It requires approximately 2½ tons of tow selling at from $80 to $120 a ton to make 1 ton of pulp suitable for bleached writing paper. The chemical consumption is about the same as for wood. The bleached paper made from seed flax fiber does not have the superior qualities of a sheet made from linen rags, and, therefore, cannot be compared with it. It is more comparable to bleached sulphite pulp, with which there is no possibility of its competing in cost.

VIII. Summary

The tests, in which the sulphate pulping process was used, indicate that:

(1) A fair quality of wrapping paper can be made from whole seed flax straw.

(2) A good quality of writing paper can be made from seed flax tow, provided especial care is taken to eliminate specks.

(3) Pulp prepared from seed flax tow can be readily bleached.

(4) The chemical consumption for the preparation of pulp from the whole straw is about double that required for wood.

(5) The chemical consumption for the pulping of a good quality of seed flax tow is only slightly in excess of that required for wood.

(6) At the present time it is not economically feasible to use seed flax fiber for the making of paper of any description, using the sulphate cooking process.

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Walsh, 1917

SOME NEW SWEDISH AND GERMAN BOOKS ON PULP AND PAPER

By Arthur S. M. Klein

Note.—The author, Arthur S. M. Klein, a native of Czecho-Slovakia, received his education at Stuttgart and Budapest, being a graduate engineer and a Doctor of Philosophy. He is of a paper-making family, having as a youth served his apprenticeship in his father's mills.

After graduation and a few years in technical work with European mills he spent a year in United States getting experience in a number of different mills among which were those at Erie, Pa., Parsons, W. Va., and Niagara Falls, N. Y. Since returning to Europe Doctor Klein has had charge of a number of important plants in central Europe and Scandinavia and at present he is located in Berlin acting as expert and consulting engineer for concerns in Sweden, Germany and Italy.

Doctor Klein is a member of TAPPI and well known to many of the Association.—Editor.

Since the war several Swedish and German books and pamphlets have been published which are not so well known in the States as some of them deserve to be.

In Sweden *Pappersmassekontoret* under the management of Ing. H. Wallins publish more or less regularly bulletins of chemical investigations and patents. The Pappersmassekontoret, which was a semi-official institute of Swedish cellulose producers' association, was dissolved last year. Some of the investigations on cellulose and wood were translated and published in American journals.

Sulphite Alcohol

In 1919 Aktiebolaget Ethyl published a book, *Minneskrift Utgiven med Anledning av Bolagets 10 Ariga Verksamhet*, which contains many illustrations and deals with the rapid advance of the Company. Ethyl built several mills in Sweden, Norway, Finland, Germany, Switzerland and also one at Mechanicville, N. Y., in the United States. Most of these mills have shut down because economic conditions have changed greatly. The price of coal and the competition of alcohol made from potatoes, etc., handicapped this industry, which has been the first to utilize on a larger scale the waste products of the pulp industry.

Use of Fuel

"Ingeniörsvetenskapakademien" published in 1921 Fr. Grewin's *Användning av Värme och Kraft inom Pappersindustrien* and G. Sundblad's *Värmeproblem inom Celluloseindustrien*, both pamphlets of 55 and 32 pages respectively, dealing with the problem of heat consumption in pulp and paper mills. They give theoretical and practical results of the Swedish pulp and paper engineers' efforts to economize on fuel. Dr. J. Ruths, a Swedish engineer, was the first, in my knowledge, who worked on practical lines and his work was undoubtedly the cause of the big interest Sweden is now taking in this question. I have heard of but have never seen any of Dr. Ruths' Swedish publications. I shall mention later one of his publications which I found in a German engineering journal.

Cost of Production

Elis Bosaeus published 1922 *Papersindustriens Productionsförhallenden*, giving figures about cost accounting and actual costs. It is an excellent booklet written by a man of high technical training and undoubted ability who is holding a commission as member of the labor-council (arbetsradet) of Sweden and who knows well all the details of Swedish statistics. I can warmly recommend this booklet to every student of Swedish conditions and I wish the author would continue his work, giving details of other statistics, too, and costs of production from other countries.

Forestry and Pulp Wood

Foresters and pulp men have profited by some articles in *Skogsvards Föreningens Tidskrift*.

An excellent book appeared the end of 1922 which every forester interested in Scandinavian forestry ought to know. But *Handbok i Skogstenologi*, published by C. E. Fritzes bokförlags aktiebolag in Stockholm, has also many merits and points of special interest to pulpmakers. I think it well worth while to mention as such the paragraphs on the growth and characteristics of the wood and Swedish spruce and pines specially. Further, the chapters on the manufacture of mechanical and chemical pulp. Some of the contributors—Prof. P. Klason, G. Magnuson, chief engineer of Skoghall-Uddeholm, and G. Sundblad, director of Iggesund—are among the best-known men of Sweden and their American friends rightly anticipate they did good work.

In Germany the three leading trade journals published several articles of greater interest. Some of our American contributors, especially Clarence West, have already translated most of them. Translations appeared in Paper Trade Journal and other American and Canadian journals.

Chemical Technology of Paper

A nice little booklet was written by Prof. Dalen. *Chemische Technologie des Papiers* by G. Dalen (publishers Joh. Ambr. Barth, Leipzig, 1921). It contains only 123 pages and is the second edition of a pre-war publication of the same author, who is W. Herzberg's co-worker and an authority on paper testing. The booklet gives many details and is well worth reading. I recommend it warmly.

Dr. W. Palmaer of Stockholm edited, 1916, "Elektrolyse von Kochsalzlösungen" in *Verbindung mit der Celluloseindustrie* (Ferdinand Enke, Stuttgart). He gives results obtained by Swedish electrochemical plants and discusses the merits of the different systems. The paper was originally read at a chemists' meeting in Gothenberg. Chemists running electrolytic bleaching plants will be interested in it.

Dr. W. Stiel's *Dampfturbine und Elektr. Kraftübertragung in der Papierindustrie* (Otto Elsner, Berlin) and the same author's articles on the electric drive of paper machines (Zeitschrift des Vereins Deutscher Ingenieure) are very exhaustive and intelligent articles on electric drives in paper mills. Stiel had many discussions with G. Lest, who advocates fervently the use of steam engines against the steam turbines favored by Stiel.

G. Lest's book, *Dampfverbrauch und Warmewirtschaft in der Zellstoff und Papierfabrikation, Umbau und Neuanlage*, published 1923 by C. Hofmann in Berlin, is the second edition of a former publication which received a prize from the Austro-Hungarian cellulose chemists' association. This was in 1914 and I am not quite sure this edition written by a man who takes too decided views on points yet open to discussion, should get a prize today. The author is not acquainted with the more up-to-date methods of Scandinavian origin which handle the heat consumption more economically and he also expresses ideas I can not let pass without contradiction. He is in favor of putting in eight small digesters instead of four big ones although few men would dare to give such general judgment, as many points have to be considered before this question could be settled.

American readers will be interested in this book although they are cautioned beforehand not to think all European engineers agree with Lest's views.

I mentioned already Dr. Johannes Ruths of Stockholm. He is

a very able engineer with some new ideas of his own. He has adversaries too, as shown by a dispute in Svenska Dagbladet last year. Some of the figures published by his company on practical results might be disputed, but undoubtedly Dr. Ruths did excellent work. He is one of the Swedish pioneers among pulpmakers handling the heat question. He published (1922) in *Zeitschrift des Vereins Deutscher Ingenieure*, a paper, "Dampfspeicher," which deals with his invention, a steam accumulator, which has some merits in comparison with other constructions.

Allgemeine Elektrizitäts Gesellschaft sent me a pamphlet published in 1922, *Kraft und Wärmewirtschaft in der Papierindustrie*, advertising skillfully some new apparatus of their make and giving figures for steam consumption which are quite up-to-date.

A very good book is *Der Wärmeingenieur* by J. Oelschläger, published in 1921 by O. Spamer, Leipzig. Everybody interested in fuel and power questions should read this book and also *Die Abwärmeverwertung im Kraftmaschinenbetrieb* by L. Schneider (2nd edition, 1920, Julius Springer, Berlin). They are not written especially for pulp and paper makers but they give a good general idea of the big problem how to use steam economically and also on the progress made in more recent years.

W. Knapp Halle published (1922) *Die Technische Herstellung von Zellstoff* by Dr. R. Schwarz. The author died before the book, containing 113 pages, appeared. His widow wrote a pathetic little preface, which is touching, but it is my duty to say I don't think the book will give any new ideas to the reader or can be looked upon as a complete study of the subject.

Die Fabrikation des Zellstoffes aus Holz Sulfitzellstoff by R. Dieckmann (published 1923 by O. Elsner, Berlin) is quite another book. It is a good book judged from a certain point of view and it gives the ideas of the continental chemist on modern sulphite pulp manufacture. He compiled many details published in German journals. He is a practical millman and a good chemist. The author took the great trouble to name everybody on everything he could lay hands on. I found my name in the authors' register more than a dozen times, but this does not hinder me from mentioning the big fault of this book: The author did not know the Scandinavian and American improvements of the recent years, lacking the bulk of the material published since 1914 outside of Germany. The main points in making pulp to economic advantage are saving of labor and fuel, and these two points are not considered sufficiently. The wood yard and wood room are the weak points of the book. (The author expresses his doubt about the advisability of fast-running barking machines on page 62 but he does not mention barking drums.) He speaks of old, nearly forgotten types of sulphur burners and acid making systems, but he does not mention new systems, as, for instance, the Barker system. The steam consumption is handled a little off-hand. Pages 206-211, 311, 255-258, etc. Altogether only about a dozen pages out of 360 the book contains are devoted to this subject. There could be made a few remarks to compare this book with Volume 3 of the new American textbook. However, the pulp maker in the States reading German will be interested in this book and I advise him to buy it but not to accept it is as the latest word in European pulp making. The publishers advertise the book at five dollars, but I think they ought to reduce the price when comparing it with volume three of the textbooks with nearly twice as many pages and printed on better paper.

I am informed the "Papierzeitung" has arranged for the third edition of the late Carl Hofmann's *Treatise on Papermaking*. This book was known to some of us older papermen as the papermaker's bible. What I know about one section written by Dr. R. Sieber on sizing and loading paper makes me believe it will be worthy of the former editions. Hofmann's co-worker, S. Ferenczi, is now the intellectual head of the publishing firm.

The end of last year brought me a copy of Franz Krawany's *Handbook of the Paper Industry for Papermakers*, industry of paper goods, consumers of paper and for the trade of all states of the world which is the subtitle of a German book which was published in Vienna by Compassverlag. Krawany was for many years the international authority on paper statistics. It was before the associations of the industries started their intensive work on this subject. In this book Mr. Krawany gives many interesting historical facts. He publishes also many very useful data on weight, size and trade of paper. Figures of general interest, a small dictionary of technical terms in English, French, Russion, Scandinavian and other languages are given. The book containing over 800 pages is neatly printed and I recommend to everybody who deals in paper or is interested in the foreign trade and statistics to get hold of a copy. It is worth while.

Cleaning Felts

The Albany Felt Company, Albany, N. Y., has ready for distribution "Methods and Materials Employed in Cleaning Papermakers' Felts" by Prof. George B. Haven, S. B., who has charge of the Textile Laboratory, Massachusetts Institute of Technology and the Research Laboratories of the Albany Felt Company. This is a reprint of the address delivered by Professor Haven before the Technical Association during the Paper Industries Exposition and it is illustrated by photomicrographs, diagrams and tables.

An extensive series of investigations and tests of over thirty proprietary compounds and washing powders was made on a standard papermakers' felt, the results of which are given.

The Albany Felt Company is initiating a felt cleansing service for its customers. A piece of new standard felt which has been tested is used in the cleansing solution employed by the customer and returned to the Albany Felt Company to be tested again and on the basis of the results advice is given.

While the cost of felts in themselves does not represent a large percentage of the total paper cost the increase due to loss of production by the necessity of changing felts on account of short life or unsatisfactory service may become a very material item.

New Apron for Paper Machine

The du Pont Company has been granted a patent on an apron for a paper manufacturing machine which is used in conducting the paper stock from the flow-box on to the machine wire. This apron is made from a coated fabric, known as fabrikoid, which has been impregnated on both surfaces with pyroxlin. It has been thoroughly tested in several large paper mills and has been found more convenient and more economical than the apron materials previously used. The pyroxylin impregnation of the fabrikoid apron renders it thoroughly waterproof and very resistant to chemical action. It is stated that fraying is almost impossible as the fibers are so closely interwoven and the pyroxylin becomes such an integral part of the fabric that it can stand a maximum amount of wear and abrasion. Buckling is reduced to a minimum.

Western Woods for Mechanical Pulp

W. A. Munro, chairman of the Groundwood Committee of the Technical Association of the Pulp and Paper Industry, is now connected with Washington Pulp and Paper Corporation, Port Angeles, Wash. As groundwood superintendent at International Falls, Minn., and Kenora, Ont., he used spruce and balsam. At Port Angeles he is investigating the properties not only of Sitka spruce but also western hemlock and other western species as to pulp yield, power required and suitability for news print in comparison with eastern spruce.

Paternalism in Treatment of Men Condemned

APPLETON, Wis., August 1, 1923.—Paternalism in the relationship between workingmen and employers was condemned by C. E. Jackson, mill manager for the Consolidated Waterpower and Paper Company of Wisconsin Rapids in an address before the Rotary club of his city.

TECHNICAL SECTION, PAGE 46

CURRENT PAPER TRADE LITERATURE

Abstracts of Articles and Notes of Papermaking Inventions Compiled by the Committee on Abstracts of Literature of the Technical Association of the Pulp and Paper Industry

Hy-Vac Sluice for Use in Connection With Cylinder Paper *Paper Trade J.* 75, No. 14, 55-57 (Oct. 5, 1922.) The object of the "Hy-Vac" sluice is to control and prevent the waste water from accumulating in front of the couch rolls on a cylinder machine, which is accomplished by applying suction through an intake nozzle resting on the felt at its first point of contact with the mold, the nozzle being at an angle of about 45° with the horizontal so as to give easy flow and ample clearance from the couch. The construction features and advantages of this sluice are enumerated. —A. P.-C.

Regulator for Motor Driven Grinders. C. A. Boddie, assignor to Canadian Westinghouse Co., Can. patent 227,304 and 227,305, Dec. 19, 1922. The grinder is preferably driven by a three-phase motor, and a load is applied to the grinder by a hydraulic system. The hydraulic pressure is controlled by a main valve which in turn is controlled by an auxiliary valve. The latter is operated by the regulator, which comprises an operating lever connected to the auxiliary valve and an electromagnet connected to the operating lever. A hydraulically operated reactance device changes the setting of the device and prevents hunting action. It comprises two pistons operating in separate cylinders and suitably connected together. One cylinder is supplied with fluid pressure to operate its piston in accordance with the operation of the main valve; and the second similarly operates with the auxiliary valve. The second cylinder is connected to the operating arm of the regulator for so changing the setting of the regulator as to prevent hunting action.—A. P.-C.

Method of Mounting Grinding Stones. W. H. Sumbling. Can. patent 228,534, Feb. 2, 1923. The end of the shaft is provided with a circular reduced bearing end, which terminates at its inner end at an annular shoulder formed in the shaft. Opposite sides of the shoulder are cut away longitudinally to the shaft to form two parallel flat faces outside of the shoulder. An inner circular bored flange is mounted on the reduced end and has its inner end cut transversely with the parallel faces of the shoulder so that the flange will positively turn with the shaft. The stone is mounted on the reduced end, and means are provided at the outer portion of the reduced end to clamp the stone firmly in position, thus holding the flange against the shoulder.—P. A.-C.

Beating

Beating and Its History. W. B. Campbell. *Paper Trade Journal* 75, No. 26, 49-50 (Dec. 28, 1922); *Pulp & Paper* 19, 671 (June 23, 1921); *Paper Trade Journal* 72, No. 24, 64, (June 9, 1921).—A. P.-C.

The Action of the Beater in Paper Making. Sigurd Smith. *Paper Maker* 64, 723-732 (Dec. 1922); *World's Paper Trade Review* 78, No. 21, 1705 & No. 22, 1810; *J. Roy. Soc. Arts* 71, 38-56 (Dec. 8, 1922); *Paper Trade Journal* 75, No. 26, 47-48 (Dec. 28, 1922) & 76, No. 1, 49-53 (Jan. 4, 1923). The author explains in detail the so-called "fibrage theory" of beating (by "fibrage" is meant the formation of the fibers along the edge of the fly bars as they travel through the stock), and demonstrates the application of this theory in practical beater trials, as well as its use in beater design. He also describes a duplex beater, which has been directly evolved out of the theory of fibrage, and which is provided with two bedplates located under the roll and separated from each other by a wide gap or chamber. While the flybars are passing over this gap, they gather on their forward edges a fresh fibrage which is abraded against the second bedplate. Various devices may be used for imparting a radial motion to the stock transversely across the edges of the flybars. Numerous trials have confirmed that with two bedplates in use the beating can be carried out in half the time required with a single bedplate and with a saving in power up to 40 per cent. (See also *Paper* 31, No. 11, 17-18, Jan. 3, 1923).—A. P.-C.

Two-Roll Beater. J. E. Brothel. Fr. patent 514,865, Nov. 19, 1920. *Paper* 24, 211 (May, 1921). *Paper Trade Journal* 75, No. 25, 30 (Dec. 21, 1922); *Pulp & Paper* 19, 885 (Aug. 25, 1921); *Paper Trade Journal* 73, No. 8, 42 (Aug. 25, 1921).—A. P.-C.

Determining the Degree of Disintegration (Digestion) of Pulp. (5-23-23; P. 8) Helmer Roschier. *Pappers Och Travarutid. För Finland,* No. 7 (April 15, 1922); *Pulp & Paper* 21, 35-36 (Jan. 11, 1923); 20, 2023 (Dec. 21, 1922); *Paper Trade Journal* 76, No. 5 60, (Feb. 1, 1923).—A. P.-C.

Analytical Methods

Quantitative Determination of Adhesive Colloids in Glue. Franz Lorenz. *Papierfabr,* 21, 105-110 (Feb. 25, 1923). Full directions are given for the following methods for testing glue; moisture, ash, acid content, foreign substances, and adhesive colloids. The last one is carried out according to the Wislicenus absorption method. The apparatus is sketched and a detailed description is given of the procedure. References are made to the following tests: viscosity, melting point of the jelly, degree of swelling, solubility, tensile strength, and binding power.—J. L. P.

Determination of Sugar in Waste Sulphite Liquor. M. Kleinstuck. *Zellstoff u. Papier* 3, 51 (Mar., 1923). The method of Glassmann, employed for determining hexoses and pentoses, is modified in that the mercury freed by the sugars is allowed to react with iodine solution in the cold; the excess iodine is titrated with thiosulphate solution. The procedure is given in detail.—J. L. P.

Special Papers

Safety Paper for Financial Uses. Georges Fournier. Fr. pat. 548,230. In the last stages of the preparation of the stock, microscopic particles are incorporated with the stock, which will characterize any given run of paper by their nature, number and color. They must not react with the stock nor with any of the ingredients of the paper, must be stable, and must not alter the surface of the paper in such a way as to interfere with proper printing. The inventor mentions vegetable spores, dead bacteria, and mineral powders having definite crystal structures, either colored or uncolored, as being particularly suitable.—A. P.-C.

The Peculiarities of Photographic Paper. Alfred B. Hitchins. *Paper Mill* 47, No. 15, 218, 220 (Apr. 14, 1923); *Paper* 32, No. 1, 5-6, 21 (Apr. 25, 1923). Brief outline of the requirements of raw photographic stock, and of the results obtained by a large U. S. papermaking firm (not named) in supplying the need caused by interruption of French and German importations during the war.—A. P.-C.

Uniting Waxed (Paraffin) Paper and Foil. E. A. Bradshaw. Can. pat. 227,922, Jan. 1, 1923. The wax paper and foil are taken from separate rolls and brought together over a guide roll into contact with a heated surface (the foil preferably engaging the heated surface). The heat melts the adjacent surface of the paraffin paper which is then immediately brought into contact with a cooling surface so as to harden the melted wax into the surface of the foil. —A. P.-C.

Waterproofing Pulp. Fritz Moeller. Ger. pat. 370,198. *Zellstoff u. Papier.* 3, 55 (Mar., 1923). The dry fibrous material is exposed to the vapors of thionyl chloride or sulphur chloride, with the addition of heat if necessary.—J. L. P.

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A PROBLEM IN JOINT COST*

By William Morse Cole

The most interesting problems in accounting arise in connection with what the economist calls "joint cost." Many of these are in the field of "distribution of overhead," as the business man usually expresses it, but occasionally one finds such a problem in connection with what at first glance appears to be a direct cost. These problems are interesting because very often no solution can be so convincing that all others are eliminated by it. Some other solution always looks almost, if not quite, as good.

By way of illustration, let us consider for a moment the cost of sorting agricultural produce into grades. Suppose, to make the case simple, we have an unsorted lot of apples, to be sorted into first quality, second quality, and culls. How shall we divide the cost of sorting among the various grades, so that we shall know what each grade cost us, and thus learn the comparative profitableness of dealing, for our market, in each grade?

Some Tentative Methods

The obvious suggestion, in line with methods used in other connections, is that the total sorting cost be distributed on the basis of time; that the time spent in picking out each grade be charged to that grade. This sounds good until we realize that if first-quality apples largely predominate, they won't be picked out at all, but will be left, and the others will be picked out from among them; and under this plan all the cost of sorting will be charged to the two poorer grades. Similarly, if seconds predominate, the first and culls will be picked out, and they alone will bear the cost. It is obvious that a plan which gives results differing so widely, not merely in degree but in kind, with a mere chance difference of circumstance, is at least questionable.

Another obvious basis for distribution is bulk. This sounds good until we realize that in circumstances under which culls largely predominate, this method makes the culls bear most of the cost, and we at once wonder whether under this plan the culls are charged for the cost of sorting as a kind of penalty-charge (penalizing them for being culls) or as a value charge (because sorting has added to their value). The practice of charging things as penalty is not good accounting, for it dilutes figures that are more useful undiluted, and certainly sorting has not added to the value, of the culls, for no one will pay more (at least by the cost of sorting) for things which he knows to be straight culls. This plan is hardly more convincing than the other.

The next basis to suggest itself is value. If, for example, the sorting shows so many bushels of first-quality apples that at the market price they are worth $500, and so many of the second quality that they are worth $200, and the culls are worth $50, this basis adds the three values together for the denominator of a fraction, and charges 500/750, or 2/3, of the sorting cost to the first quality, 200/750, or 4/15 to the second, and 50/750, or 1/15, to the culls. This makes use of both relative quantity and relative value, for it makes up its fractions from the product of the two. This sounds good until someone objects that we are trying to find costs, not values; that costs are independent of values, and that cost figures must not be influenced by selling or market figures, for the purpose of getting cost figures is in part to compare them with selling figures; and that allowing selling figures to influence cost figures is to render the comparison, to that extent, worthless.

Though many other plans may be suggested, virtually all of them come down in the last analysis to variants of these three time, bulk, value. It is obvious that we must go farther in our analysis before we can choose between them. Then this question arises: if we bought our apples as a lot, for a lump sum, shall we, or shall we not, distribute our cost of sorting on the same basis that we shall distribute our original purchase price, for the lot, over the different grades? And this in turn raises a new problem. Suppose we paid $600 for the lot unsorted. How are we going to distribute purchase price over these grades—on the basis of bulk, of market value, or on some other basis?

As a matter of fact, though time, bulk and value, as we have seen, are the chief possible bases for sorting, for the produce itself various other bases, or considerations connected with bases, must be noted. In order to bring in these other considerations, we may well change our illustration, and get temporarily into another field where the situation is not so simple.

This new case involves virtually all the considerations that can arise in connection with a problem of this sort, and that is why it is chosen. It is obvious, therefore, that it must be fairly complicated.

The Problem is More Complete in Form

A chemical company produces by the same processes two products: that is, the cheapest way for this company to produce either product is by processes which also produce the other—as is common in the chemical industries. The cost of the joint product is $51 per ton, and it comes through the processes as ¾ ton of product A, and ¼ ton of product B. The company sells product A in competition with other manufacturers; but it is the only producer of product B in large quantities, for its processes for producing the joint products are secret. It sells half of product B direct from the

* *From Howard Business Review*, July, 1923.

regular manufacture, but the other half of B it carries through other processes requiring no additional materials, to make a new product C at an additional cost of $18 per ton. The company sells product A at $80 per ton, B at $32 per ton, C at $60 per ton; and the selling costs are: A, $2; B, $3; C, $4. Although the company has a monopoly of B and C, it has found that any attempt to force up the price of either product reduces the demand so much that its production is not carried off and net receipts are reduced. It could sell all its production of B (at $32 per ton), but the public demand will take only one-half of the production of B in the developed form of C, for which the firm gets a relatively higher price ($60 per ton). This further fact is known: if the chemical elements which ultimately go into the compound products were purchased in the free state, as pure sulphur, pure phosphorus, and so on, they would cost, per ton of A, $90, and, per ton of B, $120. Our problem is to find the cost of A, of B, and of C.

The methods that suggest themselves for finding these costs may be treated as of six types (for any others are mere variants of these), all of which, of course, divide the $51 of joint cost between A and B, and then add the special costs for A, B, and C. These six types of methods for distributing the joint cost may be classified as follows: (a) in the ratio of the cost of constituent elements.

Cost of elements in each		Per cent of total	Share of $51
A ¾ ton at $90 =	$67.50	69	$35.34
1. and C ¼ ton at $120 =	30.00	31	15.66
1	$97.50	100	$51.00

Metal (a)—Cost of constituent elements

Weight of each		Per cent of total	Share of $51
A ¾ ton			$38.25
B and C ¼ ton			12.75
1			$51.00

Method (b)—Weight

Selling price of each product			Per cent of total	Share of $51
A ¾ ton at $80 =	$60.00			
Less selling cost	2.50			
Net yield		$58.50	89	$45.39
B ¼ ton at $32 =	8.00			
Less selling cost	.75			
Net yield		7.25	11	5.61
		$65.75	100	$51.00

Method (c)—Selling price

		Share of $51
Yield of B, ¼ ton at $32	$8.00	
Less selling cost	.75	
Net	$7.25	$7.25
Balance chargeable to A		43.75
		$51.00

Method (d)—B as a by-product, used to reduce cost of A

Yield of B, ¼ ton at $32 =	$4.00		
Less selling cost	.37½		
		$3.62½	
Yield of C, ¼ ton at $60 =	$7.50		
Less add. mfg. cost $2.25			
Selling cost .50	2.75	4.75	
Yield of B and C, net			$8.37½
Balance to A			42.62½
			$51.00

Method (e)—B and C as by-products, used to reduce cost of A

Yield of A ¾ ton at $80 =	$60.00	
Less selling cost	1.50	
	$58.50	$58.50
Balance to B and C, a credit, or a cost of less than nothing by		7.50
		$51.00

This $7.50 remains to divide between B and C; but as that puts us back to our original problem, we will split it tentatively between them by weight, one-half each, for the purpose of the next table.

Method (f)—A as by-product, used to reduce cost of B and C

(b) in the ratio of weight.
(c) in the ratio of selling prices.
(d) treating B as a by-product, and subtracting the net yield of B from the joint cost.
(e) treating B and C as by-products, and subtracting the net yield of both from the joint cost.
(f) treating A as a by-product, and subtracting the net yield of A from the joint cost.

The best way really to understand any of these is to try out with figures. While we are about it, too, we might as well see what profit each method shows for each product and for a total. Certain fundamental figures we will observe first, as involved in the situation.

Typical Methods Applied

Each ton costing $51 yields the following: ¾ ton of A, which costs $1.50 to sell (¾ ton at $2), and sells for $60 (¾ ton at $80); ⅛ ton of B (not converted into C) which costs 37½ cents to sell (⅛ ton at $3), and sells for $4 (⅛ ton at $32); and ⅛ ton of C, converted from B at an additional cost of $2.25 (⅛ ton at $18), which costs 50 cents to sell (⅛ ton at $4), and sells for $7.50 (⅛ ton at $60).

The tables on this page show how the $51 of joint cost is divided between A and B under each of the six methods indicated above.

Now let us see what profits are yielded for the various products

	Method a	b	c	d	e	f
Product A—						
Share of $51 joint cost	$35.34	$38.25	$45.39	$43.75	$42.62½	$58.50
Selling cost	1.50	1.50	1.50	1.50	1.50	1.50
Total cost	36.84	39.75	46.89	45.25	44.12½	60.00
Sales	60.00	60.00	60.00	60.00	60.00	60.00
Profit	$23.16	$20.25	$13.11	$14.75	$15.87½	$0.00
Product B—						
Share of $51 joint cost*	$7.83	$6.37½	$2.81	$3.62½	$3.62½	$3.75
Selling cost	.37½	.37½	.37½	.37½	.37½	.37½
Total cost	$8.20½	$6.75	$3.18½	$4.00	$4.00	$3.37½
Sales	4.00	4.00	4.00	4.00	4.00	4.00
Profit	$4.20½	$2.75	$0.81½	$0.00	$0.00	$7.37½
Product C—						
Share of $51 joint cost*	$7.83	$6.37½	$2.80	$3.62½	$4.75	$3.75
Add. mfg. cost	2.25	2.25	2.25	2.25	2.25	2.25
Selling cost	.50	.50	.50	.50	.50	.50
Total cost	$10.58	$9.12½	$5.55	$6.37½	$7.50	$1.00
Sales	7.50	7.50	7.50	7.50	7.50	7.50
Profit	$3.08	$1.62½	$1.95	$1.12½	$0.00	$8.50
Total profit A, B, C	$15.87½	$15.87½	$15.87½	$15.87½	$15.87½	$15.87½

*In every case except (e) the figure is half that shown for B in the calculation for distribution, for B and C use each one-half B's original product.

by these methods, which, it should be observed, all deal with the same conditions (the same actual costs and the same actual selling prices), but differ only in the distribution of the costs among products.

It should again be noted that all methods, give the same total or net profit for the three products, and therefore we have not by changing methods affected ultimate net results; but we have very noticeably affected the apparent profitableness of different products. A ranges in profit from $0.00 to $23.16; B from a loss of $4.20 to a gain of $7.37½; and C from a loss of $3.08 to a gain of $8.50. Clearly these cannot all be right. Equally clearly, in this particular case, the matter is of little importance, for we cannot cut out the apparently unprofitable products without cutting out the profitable ones also, and so it pays to continue manufacturing whatever cost distribution method we adopt. Yet usually a correct distribution of joint costs is essential to the correct guidance of the business, for otherwise we may be continuing an unprofitable line that we might cut out if we knew it to be unprofitable.

Typical Methods Analyzed

Let us examine these methods in the order in which they show large or small differentiation in profitableness between products. Method (a) shows the largest difference. It uses constituent elements in the free state, as a basis. It is apparent that since all the costs included in the $51 are joint, for both products went through

all processes together and all costs came out in the two products jointly, the only respect in which these products have not shared alike in the services rendered to them is their chemical content. One may have more valuable materials than the other, for the chemical processes may have caused the valuable materials to go to one rather than to the other; but the cost of getting them to go there, the cost of processes, was quite as much a cost of getting the other materials to go to the other product. Then if the pure substance of one would cost if bought independently $67, and of the other $30, apparently the elements there in the end are there in that ratio. That is undoubtedly true: the elements, as abstract uncombined substances, are there in that relative value; but as a matter of fact the values of those elements in the free state bear no relation to the cost of the combination of those elements in the particular substances produced by the factory, as is shown by the fact that the cost to the factory was so much less. Elements in combination may be worth very much less than in the free state, or very much more. Common salt is one of the cheapest chemicals in the world, but its constituent elements in the free state, sodium and chlorine, have relatively high commercial value. To divide the joint cost of A and B on the basis of their uncombined constituent elements is to keep accounts not to show what did happen, but to show what might have happened—what, in fact, never would happen—and therefore has no bearing on the present problem. The reason, presumably, that this method shows a loss for B and for C is that it has charged them for costs never actually incurred.

The next method is (b). This divides the $51 by weight. All costs start together on A and B, continue together, and result in two products, of which one is three times the other in quantity. It appears then, that three times as much of the cost has gone into one as into the other. This sounds good until one wonders whether by the same reasoning one could not use bulk as well as weight. What does one buy when one buys raw material, and what does one try to get when one incurs expenses? If one is seeking mere weight, weight is a good basis for distribution of cost; but it is not if one is seeking mere bulk. Weight is virtually never an end in itself except for ballast; and bulk is virtually never an end in itself except for packing or filling. It would be rather absurd for example, to divide the cost of silver-lead ore between silver and lead on the tonnage basis, and charge, say 200/201 of it to lead if it ran two hundred tons of lead to one ton of silver. This basis looks suspicious. The loss on B and C may be due to an overcharge on the weight basis.

Next in order comes (d), with all loss eliminated and profit shown on two products. This treats B as having no place in the intended scheme of production, but lets it stand as a necessary factor, unavoidable, in the production of A and C. It is made tributary to them. We may as well consider (e) and (f) with (d), moreover, for they all use the same principle—counting one product contributory to another. This is a common method of handling by-products, letting all the proceeds of the by-product apply to reduce the cost of the main product. Here, for example, in (d) B is considered a by-product but not C, in (e) both B and C are treated as by-products, and in (f) A is the by-product. In (f) we get the curious situation that so much is received from the sales of A, which is the main product in both weight and value but is not necessarily the main product in the intent or aim of the business, that both B and C show a profit of more than the selling price—that is, A has already brought in more than the whole cost of the joint product and so the main product B actually under this method starts its career with a credit balance, as if B cost less than nothing.

Doubtless some will say that A can not be a by-product in this case. What determines the line between main and by-product? Is it weight, bulk, value, or the aim of the business to make a particular commodity rather than a commodity that, by chance, comes along too? Clearly it cannot be weight, for often the quasi refuse is heavier than the principal product and brings an insignificant return. Bulk is no better. Value comes nearer to it; but sometimes a business specializes in a particular product, builds up a reputation for it, cares mainly about it, and yet sells more in value of some other product that, for one reason or another, goes along with it. Clearly the minor product in value then would be the main product in fact. In other words, the line between main- and by-product may exist only in the mind of the owners of the business. If, then, we are to divide our joint costs between products on the principle that the by-product shall be used to reduce costs for the main product, we shall use method (c) or (d) or (e) according as we think of each of our products A, B, and C, as main-product or as by-product. A change of mind, a change of interest, a change of policy will make the following differences: between a gain of $15.87½ on product A, out of every ton of gross product, and a gain of nothing at all; between a gain of $7.37½ on product B, and nothing at all; and between a gain of $8.50 on product C, and no gain at all—and yet everything except the state of mind of the owner, or manager, or accountant, is the same in all cases, for the *actual costs* and the *actual yield* are unchanged throughout. This is rather absurd.

Let us now examine method (c), which gives the least difference in the profitableness of the different products—indeed it is the only one which shows them all profitable. Our first question at once arises. Should all these products show a profit, as a matter of principle? Is it only by chance that here they do? This is worth attention, for it involves a more or less fundamental principle.

The Principle Involved

An illustration of the economic principle of joint costs is involved in the stock question, "Which half of a pair of shears does the cutting?" If you rest one blade of the shears on a table and then, keeping it rigid, move the other blade, can you say that the moved blade did all the cutting? Obviously if one blade moves, the very rigidity of the other blade did one-half of the cutting; for the rigid blade must have resisted as much as the moved blade pushed. It is difficult to escape a similar conclusion about joint costs and profits. If the profits are made from joint operations, they are made by all parts of those joint operations—supposing, of course, as we find here, that the processes are really joint, i. e., inseparable. You can no more eliminate one product from the profit-making than you can eliminate one blade of the shears from the cutting. The bulk, and the weight, and the value, and the intent of the manager, cannot eliminate the fact of the "jointness" of the profit if the processes that produced the total value of the goods sold at a profit were themselves joint. A realization of this eliminates methods (d), (e), and (f), outright; for this principle denies that in determining costs, whatever we may do as a matter of sales policy, we can make any part of a joint yield tributary, and merely tributary, to other parts.

Next we are faced, if we accept the principle of joint profits, with the problem of dividing the cost between the joint products so that all, if any, will show a profit. In the case of the shears, we had an obvious fifty-fifty division not merely because we had two factors, but because we had two similar or equal factors. Here we have factors unequal in weight, in content, and in selling value. Of this inequality we must take cognizance. What is a better criterion of the value that has gone into anything than the value that comes out (supposing the thing is not more or less self-developing, like agricultural products)? And what is cost but the value that has been put in? If the value is there, it is there because we put it in; and if one of the joint products has twice the value of another, the reason must be that into that product went twice as much of that which gives it value; and since the things which went into it are our costs, twice as much of our costs went into it as into that other. This is the principle of method (c), which we may call the principle of relative yield.

We have still one point to observe. We saw, with respect to our sorting cost for apples, that we must not let our selling price warp our cost figures. Let us see just what this means. We must not

think a thing cost more than it did merely because we can sell it for more, nor must we charge it less for cost merely because it "cannot stand the charge." The purpose of cost accounting is to find the facts—it is not a game of manipulating figures so as to make a good showing. The only good showing it knows is a true showing. Charging "what the traffic can bear" is not an accounting motto. In our problem here, however, we are not concerned with finding absolute costs; absolute cost is known—$51 per ton. We are merely to find where that fifty-one dollars' worth of cost went. All the costs that made up the $51 went to create, with the additional costs and the profits, the value that came back in sales. When we distribute them according to the value as disclosed by sales, we are not letting selling costs influence our judgment of absolute costs; we are merely dividing a figure of cost, for which we can find no other basis for division so satisfactory, on the theory that it presumably put value into the product in the same ratio that the value came out.

Testing the Principle

A change in the relative selling prices of these products, obviously, will under this method affect our figure of cost for each (but not total cost, of course). This is as it should be. If prices change relatively, the value of what is in the products has changed; and hence the relative values of what we have put in, or our relative costs, have changed. The total of what we have put in may not have changed, but the value of these separate things (raw material, machine processes, labor, and so on) that we have put in may change with changes of demand or of general conditions, and so that three products, A, B, C, having different shares of these things, have new relative values. It is not violating the principle of relative yield to distribute the joint costs on the basis of relative selling values as of the time when the costs were incurred; but since the costs were incurred for the purpose of getting them out, with a profit, at a future value, it seems more logical to use that latter value.

It should be admitted outright, that there are conceivable conditions under which our theory apparently will not match exactly with the facts, such as when, though our labor is for joint product, we could by very careful time study and physical experiment and chemical tests discover that the labor element in some processes actually produced more results on one product than on the other, relatively to weight or value or bulk, and therefore we have a more scientific basis for division of costs than that given above. It is obvious, however, that the moment we by analysis find the actual portion of labor, material, and so on, going into each of two or more products, that moment our costs cease to that extent to be joint in the true sense. By joint costs we mean those which are inseparable—either actually, or for practical purposes (as when the cost of separation would be prohibitive). For those, it is hard to get away from the fact that joint costs are in the product in the same ratio that they come out (after allowing, of course, as we have done above, for costs not joint, like the additional manufacturing costs in C, and the selling costs), and that any excess yield is a profit attaching to all the joint products in the same relative proportions.

In the case of our problems, the fact that there is no competitive market price for B and C does not alter the principle. The value that we get out comes from the value that we put in, plus a profit, and if we get a relatively high price for our monopoly product and a relatively low price for our competitive product, the things that we put into our monopoly product are relatively more valuable for our purposes, ipso facto, when they go in, than those that go into our competitive product, and hence should bear a larger share of the total cost—i. e., they should bear more and the other less of the total actual cost.

Under an extension of this principle the distribution of the $51 of original joint cost should not give equal shares to B and C, but should take account of C's relatively greater yield; but in the table above this was not done, for at that point it would have unduly complicated the illustration. When that adjustment has been made under method (c), taking the yield of B as ⅛ ton at $32 less expenses, and of C as ⅛ ton at $60 less expenses, A takes $44.37 of the $51, B $3.06, and C $3.57, and the relative profits are correspondingly affected.

This principle of relative yield has application in many and various fields. It is particularly useful in chemical and mining industries, and in agriculture and the treatment of food products. The cost of a hide, for example, must often be divided between the grain and the split leather.

We may now well revert to our original illustration of joint costs—the sorting of apples, and the cost of the apples themselves. It is obvious that if we adopt the principle of relative yield, here set forth, the original cost of the apples, $600 will be divided in the ratio of 2/3, 4/15 and 1/15, their relative selling values; and we now reject the criticism that costs must not be affected by selling prices, for we see that the distribution of joint costs, though not actual costs, must usually be so affected. When we turn to sorting, however, we may not be willing to go so far. To distribute the sorting cost in the same ratio is to assume that the sorting contributes relatively as much to the value of the culls as it does to the grade apples. This is not true. Indeed, both the aim and the accomplishment of the sorting is to bring out, to differentiate, the value already in the grade apples that is not in the culls. The sorting contributes to the value of the better apples only; and hence the cost should be borne by those two grades only, and should be divided in the ratio of the selling prices (after allowing for the expenses of selling). In this case, both original purchase and sorting cost are true joint costs.

If it can be shown that sorting adds more relatively to the value of the first-quality apples than to the value of the second quality, our problem at once changes character. Then we know the relative value of first-quality and second-quality apples, both sorted and unsorted (a price fixed before sorting but to be paid on what is found as a result of sorting). This gives us a new set of figures for our joint-cost distribution. The cost of sorting has a direct measurable result in an addition to selling price. If sorting costs us $50, and adds $75 to the value of the first-quality apples and $25 to the value of the second-quality, obviously three-fourths of the $50 is chargeable to the better grade and one-fourth to the poorer.

Many variations of this principle appear in industry, and it is always interesting to recognize them and make the necessary adjustments to eliminate the portions of cost which are not joint, and then apply the principle of relative yield to what remains. Indeed, it is this sort of thing that makes the work of an accountant full of variety and interest, for new situations are constantly arising and new principles must be found—or old principles must be recognized in new guises.

Pulpwood Bill Vetoed in Wisconsin

[FROM OUR REGULAR CORRESPONDENT.]

APPLETON, Wis., August 1, 1923.—A bill, which passed both houses of the Wisconsin legislature to require the purchaser of pulpwood to have it scaled under supervision of an official scaler, appointed by the state, was vetoed by Governor J. J. Blaine. The governor said the proposed law would not protect either the woodsman or the manufacturer.

Dells Paper Co. to Enlarge Plant

[FROM OUR REGULAR CORRESPONDENT.]

APPLETON, Wis., August 1, 1923.—Plans for enlarging and remodeling the plant of the Dells Pulp and Paper Company at Eau Claire are being developed. It is said the work will involve an expenditure of several hundred thousand dollars. L. A. DeGuerre, hydro-electrical engineer and architect of Wisconsin Rapids, has been engaged to take care of the engineering.

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PERKINS-GOODWIN CO.
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PULP and PAPER

Agents A/S Toten Cellulosefabrik
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APPLETON WOOLEN MILLS
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New York Trade Jottings

The Kimberly-Clark Company, with headquarters at Neenah, Wis., has leased the six-story building at 616-620 West 46th street.

* * *

Isador Haller, doing business as the Green River Paper Company, 173 Third avenue, has filed a petition in bankruptcy with liabilities placed at $2,129 and no assets.

* * *

Anthony Robilotta, formerly connected with Chase & Norton, Inc., 275 Water street, is now conducting his own business in paper manufacturers' supplies at 181 South street. At present Mr. Robilotta is specializing in the handling of all grades of waste paper and rags.

* * *

An involutary petition in bankruptcy has been filed against the Wisser Box Board Company, Inc., 97 Bleecker street, by Waverly Paperboard Company for $1,401; McEwan Brothers, $6,776; Newark Boxboard Company, $4,800. The liabilities of the company are about $20,000; assets about $500. Julius S. Berg has been appointed receiver by Judge Winslow.

* * *

O. M. Porter has resigned his position as secretary of the Salesmen's Association of the Paper Industry, and Thomas J. Burke, secretary of the Cost Association, will take his place. Mr. Porter wishes to devote all of his time to the work of the Committee on the Perpetuation of the Paper Industry in the United States and felt that he would not have the time to do justice to both positions.

* * *

The Saratoga Paper Company, Inc., of Saratoga Springs, filed articles of incorporation last week with James A. Hamilton, secretary of state. The charter granted the company announces that it is authorized to engage in the manufacture of wood pulp and paper. The new concern begins business with offices at Ballston Spa. The incorporators of the concern described themselves as New York City men. They are George B. Brooks, P. B. Barringer, Jr., and John G. Jackson.

* * *

A. G. Caldwell, who for a number of years was connected with the Orr Felt and Blanket Company, joined the forces of the Becker Woodpulp Company of America, 501 Fifth avenue, on August 1. He will be its sales representative throughout the eastern district. Hal E. Stratton will take charge of the sales in the Kalamazoo district, it was announced, and his headquarters will be at the Park-American Hotel in Kalamazoo. Frank E. Dunaway, who has been prominently connected with the paper industry for many years, is the sales manager of the corporation.

* * *

A call for motion picture films to be shown at the chemical exposition has been sent by the management to exhibitors. Films of a technical nature covering some phase of the chemical, chemical consuming, equipment, or allied industries are being procured.

An exhibit showing what chemicals have done in the development of the radio will be one of the educational features of the chemical exposition this year. Any exhibitor at the exposition who manufactures products which in any way enter into the field of wireless telephony will be permitted to place his products in this special radio exhibit. Not only the raw materials furnished by the chemical industry for the radio industry will be shown but finished articles suitable for use in this field can be entered.

C. H. Dexter & Sons Make Improvements

WINDSOR LOCKS, Conn., July 30, 1923.—C. H. Dexter & Sons, Inc., have work under way on a new 4-story addition for extensive increase in production.

Recent Incorporations

LAGLER PAPER PRODUCTS COMPANY, INC., Wilmington, Delaware. —Manufacture of coated paper, etc.; capital, $1,100,000.

OTAKA PAPER COMPANY, Dover, Delaware.—A general manufacturing business; capital, $200,000.

SANI PAPER PRODUCTS COMPANY, Delaware, manufacturers of paper products. Capital, $100,000. Incorporators: Samuel Feinberg, William Feinberg, Wilmington, Del.; George K. Hoff, Jr., Philadelphia. Samuel Feinberg, 806 King street, Wilmington, agent.

CLINTON PAPER CORP., Brooklyn, New York. Capital $50,000. Incorporators: J. Galewitzi, S. Schrier. Attorney, J. Petchesky, 261 Broadway, New York.

STANFORD PAPER COMPANY, manufacturing paper. Capital $150,000. Dover, Delaware. R. S. Corporation Company.

NEW ORLEANS CORRUGATED BOX COMPANY, New Orleans, Louisiana. Capital, $500,000.

Polish Paper Industry's Difficulties

[FROM OUR REGULAR CORRESPONDENT.]

WASHINGTON, D. C., August 1, 1923.—Poland has now followed the lead set by other European countries by running into difficulties in the paper industry, according to the *Journal de Pologne*. Wholesale merchants have practically stopped buying locally because of the stagnation of the domestic industry resulting from inadequate credit and currency facilities.

Two other factors have been the rise of prices above world levels and the reduction of the duties on certain grades of high grade paper. Both of these developments have resulted in the increase of imports and in some cases have caused local mills to reduce production.

Until this most recent development the Polish paper industry has shown a steady improvement since 1919. There has been considerable new construction and enlargement of capacity, but even with that, domestic production measures only about 40 per cent of consumption. During 1913 the production of paper was 62,000 tons and that of cellulose 27,000 tons. In 1919, after the revival had begun, the quantities were 15,000 tons of paper and 6,900 tons of cellulose. The two items maintained a fairly even ratio as they climbed steadily to 42,000 and 17,500 tons respectively in 1922.

Louis Blair Killed in Wet Machine

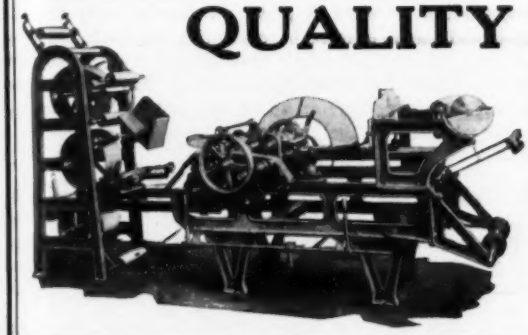
[FROM OUR REGULAR CORRESPONDENT.]

APPLETON, Wis., August 1, 1923.—Louis Blair, 15-year-old son of August Blair, superintendent of the Riverside Fibre and Pulp Co. pulp mill at Little Rapids, was killed when he was caught in the rollers of a wet machine. Another youth, just starting to work, saw the boy going headlong into the mechanism and rushed to stop the machine but the Blair boy was dead before he could be helped. His neck was broken and his body crushed. No one saw the accident but it is believed he climbed on the machine to remove a wrinkle from a blanket and fell headlong into the gears.

G. A. Manz, Fifty Years With J. & F. B. Garrett

SYRACUSE, N. Y., August 1, 1923.—G. A. Manz, president of this company, will, on August 13, complete his fiftieth year of continuous service with this concern, entering the employ of J. & F. B. Garrett on August 13, 1873, and having continued with this company ever since.

J. & F. B. Garrett were established in business in 1866 and J. & F. B. Garrett Company were incorporated in 1909.



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The Superintendent of a large bag plant, unsolicited, writes: "All the machines used by this Company have been furnished by you. During my fifteen years in the bag line I have used your machines, and consider them the best square and flat bag machines on the market. I see no reason why the bag manufacturers should not be satisfied with your machines. The design of the Fischer machines and workmanship are A No. 1."
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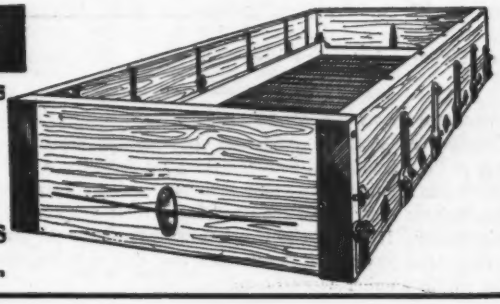

New York Market Review

OFFICE OF THE PAPER TRADE JOURNAL,
WEDNESDAY, August 1, 1923.

Paper men report that there have been definite evidences during the past week of better business. Inquiries are increasing in volume and a slightly better demand is noticeable in almost all of the various grades of paper. This is taken to mark the end of the dullness that comes and passes with the summer. Everyone is apparently getting ready to do an unprecedented business in the fall and dealers are extremely optimistic over the prospects now in sight.

Fine papers showed slight increases in demand last week. In the open market trading was noticeably better and there were definite signs of interest from large consumers. For most of the past year there has been no real change in prices in these grades and this condition still continues with a much firmer undertone in evidence in the market.

Book paper is also showing signs of improvement both in the local and foreign markets. Prices are very firm as a result of the better demand although there is no likelihood of increases for the next week or so at least. Experts are expecting that the export trade from New York will be considerably increased during the next month and they admit that there is still considerable room for improvement in this part of the market.

News print still continued to be the fastest moving article in the market with the exception of side runs, which, while they have shown an increased demand, are not quite up to rolls and sheets. Dealers, however, are not worried over this and say that side runs are in the nature of things liable to lag a little behind their relatives. Prices remain in a very firm condition with no indication of changes n either direction. Apparently the buyers are more interested in news print than they were in the early part of July and there is every indication that the fall trading will be heavy, particularly since the newspapers say that there are an unprecedented number of national advertising campaigns being prepared for launching in the next two or three months.

Coarse papers and kraft were in somewhat better shape this week although the market is still slow for them in comparison with some of the other commodities. Large buyers of wrapping paper reort that their business is on the up-grade and they are beginning to purchase paper with an eye to future needs. This will in all probability cause an upward revision in the price of the first grade of kraft which has been rather lower than is normal in relation to the other grades.

Auguries of a change for the better in the tissue market have been noted by the prophets of the trade during the week. For several weeks now tissues have been exhibiting signs of lassitude and trading in the open market has fallen off to a considerable extent. Now, however, large buyers are sending in inquiries on future prices and shipments and it is believed that the present dullness will disappear when a few more large orders come in.

The same story was told in the board market. Board has been in rather a shaky condition for the past week with trading on the open market spotty and little interest shown in orders for future shipment. There have been encouraging signs, however, during the past few days and dealers say that they do not expect the present condition to last much longer.

Mechanical Pulp

Threatened low water conditions in the north and the threat of a Canadian embargo on pulpwood have caused unusually heavy buying in the groundwood market during the past few weeks. This condition has continued and pulp dealers say that they are doing a better business than they have done for several years at this time in this quality. It is doubtful if prices will remain at the same level that they have been and it is expected that they will rise to higher points within another week or so.

Chemical Pulp

Slight downward revisions in prices on chemical pulp are reported to have brought in more buyers during the week and it is probable that quotations will regain their former levels. Most of the consumers realize that it is improbable that they will be able to get as attractive prices again in a long time and this is prompting them to take advantage of the present low levels.

Old Rope and Bagging

Higher grades of old rope are in slightly better demand this week. The lower grades are still moving slowly. In bagging the change is more pronounced and dealers report that several large lots have passed through the open market at fairly good prices.

Rags

Exports of rags have not improved greatly during the week owing to the fact that many houses in Europe that formerly sold in this country have found it more profitable to sell to customers nearer at hand. In the domestic market there was continued improvement although prices are not as firm as dealers would like to see them.

Waste Paper

Waste paper was in remarkably good condition during the week in comparison to what it has been for some time past. There was more of a demand for the higher grades and the lower also showed signs of a brisker demand. The whole market has a firmer undertone and packers are receiving many more inquiries from dealers, who, in turn, say that there is considerably more life in the attitude of mills.

Twine

There have been no further changes in twine and prices are continuing at the same level. Manufacturers say that the prices are now lower than they should be and that they will undoubtedly return to their former level within a short time.

Old Newspaper Demand in Hongkong

WASHINGTON, D. C., August 1, 1923.—A considerable trade is done in Hongkong in the sale of old newspapers, which are used by the Chinese for wrapping purposes, according to the report received by the paper division of the Department of Commerce from American Consul Webber, at Hongkong. The imports vary from 4,000 to 7,000 tons per annum, the United States supplying on an average 98 per cent of this amount and the balance coming chiefly from the Philippines and Canada. The greater portion of the imports are sold to the nearby markets of South China, Indo-China, and Siam.

Imports are generally made in bales of 200, 280, and 560 pounds, bound with iron hoops and entirely free from magazines or catalogues. Quotations are generally given c.i.f. Hongkong, although some firms buy f.o.b. Payment is usually made on the basis of cash against documents or upon arrival of the goods. The retail price depends on the market price in the United States, Kongkong prices being generally about ten per cent above the former. At present writing the current price is $95.00 gold per long ton.

Hongkong being a free port, no duty is charged on this class of merchandise, although a five per cent ad valorem duty is charged on all goods entering the Republic of China.

Indiana Board Co. to Build Board Mill

MEMPHIS, Tenn., July 30, 1923.—The Indiana Board and Filler Company, Vincennes, Ind., has preliminary plans in progress for the construction of a new pulp mill at its plant on Thomas street, Memphis, comprising the former works of the Tennessee Fibre Company, recently acquired. The new mill will be equipped for the manufacture of strawboard and kindred products, and will have an initial output of about 35 tons a day. Employment will be given to about 150 operatives. The new plant, with machinery, will cost approximately $500,000.

Market Quotations

PAPER STOCK SECURITIES

New York Stock Exchange closing quotations July 31, 1923.

	BID	ASKED
American Writing Paper Company, pref.	12	12⅞
International Paper Company, com.	32	33
International Paper Company, pref., stamped	64	65
Union Bag & Paper Corporation	65½	67½

Paper

F. o. b. Mill.			
Ledgers	11.00	@	38.00
Bonds	9.00	@	45.00
Writings—			
Extra Superfine	14.00	@	30.00
Superfine	14.00	@	30.00
Tub Sized	10.00	@	15.00
Engine Sized	8.00	@	11.00
News—f. o. b. Mill—			
Rolls, contract	3.80	@	4.00
Rolls, transit	4.00	@	4.25
Sheets	4.25	@	4.50
Side Runs	3.50	@	4.15
Book, Cased—f. o. b. Mill			
S. & S. C.	7.25	@	9.00
M. F.	7.00	@	8.75
Coated and Enamel	9.00	@	14.00
Lithograph	9.00	@	14.00
Tissues—f. o. b. Mill			
White No. 1	.90	@	1.00
White No. 2	.85	@	.95
Colored	1.15	@	2.00
Anti-Tarnish	1.50	@	2.00
Kraft	.95	@	1.15
Manila	.85	@	.95
Kraft—f. o. b. Mill—			
No. 1 Domestic	6.50	@	7.50
No. 2 Domestic	6.00	@	6.50
Imported	6.50	@	7.00
Screenings	3.25	@	3.50
Manila—			
No. 1 Jute	8.50	@	9.00
No. 2 Jute	7.75	@	8.50
No. 1 Wood	4.75	@	5.50
No. 2 Wood	4.00	@	4.50
Butchers	4.25	@	4.75
Fibre Papers—			
No. 1 Fibre	6.00	@	6.25
No. 2 Fibre	5.25	@	5.50
Common Bogus	3.50	@	—
Card Middies	4.00	@	5.00
Boards—per ton—			
News	60.00	@	90.00
Straw	61.00	@	63.00
Chip	57.50	@	60.00
Binders' Boards	75.00	@	80.00
Sgl. Mla.L1. Chip	74.00	@	80.00
Wood Pulp	70.00	@	75.00
Container	70.00	@	80.00
Sulphate Screenings—			
Coarse	.80	@	.90
Refined	1.75	@	2.00
Ground Wood			
Screenings	20.00	@	25.00
Glassine—			
Bleached, basis 25 lbs.	15.00	@	16.00
Bleached, basis 20 lbs.	17.00	@	18.00
Papermakers' Felts per ton—			
Dry	75.00	@	85.00
Saturated	65.00	@	75.00
Sheathing Paper, per ton—			
Rosin Sized (red and gray, 30 lbs. per 500 sq. ft.)	55.00	@	65.00

Mechanical Pulp

(Ex-Dock)			
No. 1 Imported	35.00	@	40.00
(F. o. b. Mill)			
No. 1 Domestic	35.00	@	40.00

Chemical Pulp

(Ex-Dock, Atlantic Ports.)			
Sulphite (Imported)—			
Bleached	4.50	@	5.00
Easy Bleaching	3.50	@	3.75
No. 1 strong unbleached	3.30	@	3.50
No. 2 Strong unbleached	2.85	@	3.10
No. 1 Kraft	3.25	@	3.40
Sulphate—			
Bleached	4.00	@	4.15
(F. o. b. Pulp Mill.)			
Sulphite (Domestic)—			
Bleached	4.50	@	5.00
Strong unbl'ched	3.10	@	3.30
Easy Bleaching			
Sulphite	3.25	@	3.50
News Sulphite	3.00	@	3.25
Mitscherelich	3.20	@	3.30
Kraft (Domestic)	2.10	@	3.30
Soda Bleached	4.25	@	4.35

Domestic Rags

New Prices to Mill, f. o. b. N. Y.			
Shirt Cuttings—			
New White, No. 1	12.00	@	13.00
New White, No. 2	5.75	@	6.50
Silesias, No. 1	7.00	@	7.50
New Unbleached	10.50	@	11.00
Washables	4.50	@	4.75
Fancy	5.50	@	6.00
Cotton—according to Grades—			
Blue Overall	7.25	@	7.50
New Blue	4.50	@	5.50
New Black Soft	4.75	@	5.25
New Light Seconds	2.75	@	3.00
O. D. Khaki Cuttings	4.25	@	4.50
Men's Corduray	3.00	@	3.50
New Canvas	6.50	@	7.00
New Black Mixed, Old	2.60	@	2.80
White, No. 1—			
Repacked	5.50	@	6.00
Miscellaneous	4.75	@	5.25
White, No. 2—			
Repacked	3.25	@	3.75
Miscellaneous	2.75	@	3.00
St. Soiled, White	1.90	@	2.10
Thirds and Blues—			
Repacked	2.35	@	2.60
Miscellaneous	1.90	@	2.15
Black Stockings	2.75	@	3.00
Roofing Rags—			
Cloth Strippings	1.10	@	1.20
No. 1	1.10	@	1.20
No. 2	1.05	@	1.15
No. 3	.80	@	.90
No. 4	.80	@	.90
No. 5A	1.00	@	1.10

Foreign Rags

New Light Silesias	6.00	nominal
Light Flannelettes	6.75	nominal
Unbl'ched Cottons	7.50	nominal
New White Cuttings	9.50	nominal
New Light Oxfords	6.00	nominal
New Light Prints	4.50	nominal
New Mixed Cuttings	2.00 @	2.50
New Dark Cuttings	1.90 @	2.10
No. 1 White Linens	10.00	nominal
No. 2 White Linens	6.50	nominal
No. 3 White Linens	5.00	nominal
No. 4 White Linens	3.50	nominal
Old Extra Light Prints	2.00	nominal
Ord. Light Prints	1.75	nominal
Med. Light Prints	1.50	nominal
Dutch Blue Cotton	1.85 @	2.15
German Blue Cottons	1.65	nominal
Ger. Blue Linens	3.50	nominal
Checks and Blues	1.50	nominal
Dark Cottons	1.30 @	1.35
Shoppery	1.00 @	1.05
French Blues	1.75 @	2.00

Bagging

Prices to Mill F. o. b. N. Y.			
Gunny No. 1—			
Foreign	1.20	@	1.25
Domestic	1.30	@	1.35
Wool, Tares, light	1.30	@	1.40
Wool, Tares, reavy	1.30	@	1.40
Bright Bagging	1.05	@	1.20
Sound Bagging	.85	@	.95
Manila Rope—			
Foreign	5.95	@	6.20
Domestic	6.20	@	6.40
New Bu. Cut	2.15	@	2.25
Hessian Jute Threads—			
Foreign	2.00	@	2.25
Domestic	2.00	@	2.10
Mixed Strings	1.00	@	1.10

Twines

Cotton—(F. o. b. Mill)			
No. 1	.35	@	.37
No. 2	.31	@	.33
No. 3	.37	@	.39
India, No. 6 basis—			
Light	.20	@	.21
Dark	.19	@	.20
B. C. 18 basis	.41	@	.42
A. B. Italian, 18 Basis	.51	@	.61
Finished Jute—			
Dark, 18 basis	.29	@	.30
Light, 18 basis	.26	@	.27
Jute Wrapping, 3-6 Ply—			
No. 1	.23	@	.24
No. 2	.21	@	.22
Tube Rope—			
4-ply and larger	.15	@	.17
Fine Tube Yarn—			
5-ply and larger	.19	@	.21
4-ply	.20	@	.22
3-ply	.20	@	.22
Unfinished India—			
Basis	.16	@	.17
Paper Makers Twine			
Balls	.13	@	.15
Box Twine, 2-3 ply	.18	@	.19
Jute Rope	.17	@	.20
Amer. Hemp, 6	.33	@	.35
Sisal Hay Rope—			
No. 1 Basis	.15	@	.17
No. 2 Basis	.13	@	.15
Sisal Lath Yarn—			
No. 1	.14	@	.15
No. 2	.11	@	.13
Manila Rope	.18	@	.19

Old Waste Papers

(F. o. b. New York)			
Shavings—			
Hard, White, No. 1	3.65	@	3.80
Hard, White, No. 2	2.75	@	2.90
Soft, White, No. 1	2.60	@	2.80
Flat Stock—			
Stitchless	1.60	@	1.70
Over Issue Mag.	1.60	@	1.70
Solid Flat Book	1.55	@	1.65
Crumpled No. 1	1.30	@	1.40
Solid Book Ledger	1.85	@	1.95
Ledger Stock	1.60	@	1.70
New B. B. Chips	.65	@	.75
Manilas—			
New Env. Cut	2.25	@	2.50
New Cut No. 1	1.75	@	2.00
Extra No. 1 old	1.45	@	1.55
Print	.90	@	1.00
Container Board	.75	@	.85
Bogus Wrapper	.70	@	.75
Old Krafts, machine compressed Bales	1.75	@	1.90
News—			
No. 1 White News	2.00	@	2.10
Strictly overissue	1.05	@	1.15
Strictly Folded	.95	@	1.05
No. 1 Mixed Paper	.70	@	.80
Common paper	.50	@	.60

CHICAGO

[FROM OUR REGULAR CORRESPONDENT.]

Paper

F. o. b. Mill			
All Rag Bond	35	@	40
No. 1 Rag Bond	30	@	35
No. 2 Rag Bond	18	@	25
Water Marked Sulphite	10	@	14
Sulphite Bond	9	@	12
Sulphite Ledger	11	@	14
Superfine Writing	18	@	24
No. 1 Fine Writing	14	@	22
No. 2 Fine Writing	12	@	20
No. 3 Fine Writing	9	@	12
No. 1 M. F. Book	6½	@	7
No. 1 S. & S. C. Book	7	@	7¼
Coated Book	9	@	10¼
Coated Label	9	@	10
News—Rolls mill	4	@	4½
News—Sheets, mill	4¼	@	4¾
No. 1 Manila	4½	@	6
No. 1 Fibre	5½	@	5¾
No. 2 Manila	4½	@	5
Butchers' Manila	4	@	4½
No. 1 Kraft	7	@	7½
No. 2 Kraft	6½	@	7
Wood Tag Boards	5	@	5½
Screenings	5	@	5½
Boards, per ton—			
Plain Chip	60.00	@	65.00
Solid News	65.00		70.00
Manila Lined Chip	70.00	@	72.50
Container Lined—			
85 Test	75.00	@	80.00
100 Test	80.00	@	85.00

Old Papers

F. o. b. Chicago			
Shavings—			
No. 1 Hard White	3.50	@	3.60
No. 1 Soft Shav.	3.25	@	3.35
No. 1 Mixed	1.60	@	1.70
No. 2 Mixed	1.50	@	1.60
White Envel. Cuttings	3.50	@	3.60
Ledgers and writings	1.75	@	1.80
Solid Books	1.75	@	1.80
No. 1 Books, Light	1.50	@	1.55
Blanks	1.90	@	2.00
Ex. No. 1 Manila	1.90	@	2.00
Manila Envelope Cuttings	2.50		
No. 1 Manilas	1.60	@	1.70
Folders News (over issue)	1.35	@	1.45
Old Newspaper	1.15	@	1.20
Mixed Papers	.75	@	.80
Straw Clipings	.85	@	.95
Binders Clipings	.85	@	.95
Kraft	2.40	@	2.50
New Kraft Cuts	2.30	@	2.40
Roofing Stock, f. o. b. Chicago, Net Cash—			
No. 1	32.00	@	—
No. 2	30.00	@	—
No. 3	28.00	@	—
No. 4	28.00	@	—

PHILADELPHIA

[FROM OUR REGULAR CORRESPONDENT.]

Paper

Bonds	.10	@	.60
Ledgers	.15	@	.40
Writings—			
Superfine	.15	@	.20
Extra fine	.12	@	.22
Fine	.20	@	.30
Fine, No. 2	.20	@	.25
Fine, No. 3	.15	@	.20
Book, M. F.	.06	@	.11
Book, S. S. & C.	.08	@	.15
Book, Coated	.08	@	.15
Coated Lithograph	.10	@	.15
Label	.08	@	.15
News	.05	@	.07
No. 1 Jute Manila	.12	@	.13
Manila Sul., No. 1	.08	@	.10
Manila No. 2	.07½	@	.08
No. 2 Kraft	—	@	.10
No. 1 Kraft	—	@	.11
Common Bogus	.02½	@	.03
Straw Board	75.00	@	85.00
News Board	65.00	@	70.00
Chip Board	62.50	@	67.00
Wood Pulp Board	1.25	@	1.50
(Carload Lots)			
Binder Boards—			
Per ton	75.00	@	80.00
Carload lots	75.00	@	80.00
Tarred Felts—			
Regular	48.00	@	50.00
Slaters	54.00	@	56.00
Best Tarred, 1-ply (per roll)	1.35	@	1.50
Best Tarred, 2-ply (per roll)	1.00	@	1.15
Best Tarred, 3-ply	1.50	@	1.65

Bagging

F. o. b. Phila.			
Gunny No. 1—			
Foreign	1.25	@	
Domestic	1.20	@	1.25
Manila Rope	5.00	@	6.25
Sisal Rope	.75	@	.80
Mixed Rope	.75	@	.80
Scrap Burlaps	1.00	@	1.25
Wool Tares, heavy	2.50	@	2.75
Mixed Strings	.75	@	.80
No. 1, New Lt. Burlap	1.75	@	2.00
New Burlap Cuttings	1.75	@	2.10

Old Papers

F. o. b. Phila.			
Shavings—			
No. 1, Hard White	4.00	@	4.25
No. 2, Hard White	3.50	@	3.75
No. 1 Soft White	3.50	@	3.75
No. 2 Soft White	1.75	@	2.00

(*Continued on page 64*)

Imports and Exports of Paper and Paper Stock

NEW YORK, BOSTON, PHILADELPHIA AND OTHER PORTS

NEW YORK IMPORTS

WEEK ENDING JULY 28, 1923

SUMMARY

News print.....413 cs., 198 bls., 989 rolls
Printing paper.....221 cs., 70 rolls
Wall paper.....105 rolls, 32 bls., 1 cs.
Cigarette paper .....26 bls.
Packing paper.....62 cs., 5,126 bls., 1,655 rolls
Kraft paper.....2,227 rolls, 479 bls.
Wrapping paper .....10 bls.
Coated paper .....87 cs.
Tracing paper .....34 cs.
Tissue paper .....8 cs.
Copy paper .....13 cs.
Miscellaneous paper....131 cs., 508 bls., 416 rolls

CIGARETTE PAPER

Max Spiegel & Sons, G. Verdi, Genoa, 26 bls.

WALL PAPER

F. & R. Trading Corporation, Orduna, Hamburg, 105 rolls.

R. F. Downing & Co., Takoaka Maru, Yokohoma, 28 bls.

A. Murphy & Co., Hansa, Hamburg, 4 bls. 1 cs.

NEWS PRINT

H. Reeve Angel & Co., Inc., Innoko, Antwerp, 413 cs., 10 lbs., 229 rolls.

Chemical National Bank, Orduna, Hamburg, 649 rolls.

Corn Exchange Bank, Manchuria, Hamburg, 111 rolls.

C. H. Young Publishing Company, Grete, Hamburg, 188 bls.

PRINTING PAPER

Chemical National Bank, Orduna, Hamburg, 70 rolls.

Meyercord Company, Caronia, Liverpool, 10 cs.

F. B. Vandergrift & Co., Hansa, Hamburg, 211 cs.

PACKING PAPER

Falsing Paper Company, Hansa, Hamburg, 62 cs.

Republic Bag & Paper Company, by same, 136 bls.

Republic Bag & Paper Company, Ala, Rotterdam, 1,593 rolls.

J. B. Moars & Co., Grete, Hamburg, 62 rolls, 4,990 bls.

KRAFT PAPER

M. O'Meara Company, Orduna, Hamburg, 71 rolls.

Wilkinson Brothers & Co., Inc., by same, 2,156 rolls, 375 bls.

M. O'Meara Company, Manchuria, Hamburg, 94 bls.

WRAPPING PAPER

C. Steiner, Yorck, Bremen, 10 bls.

COATED PAPER

F. Heujes, Jr., Yorck, Bremen, 87 cs.

TRACING PAPER

E. Dietzgen & Co., Grete, Hamburg, 34 cs.

TISSUE PAPER

F. C. Strype, Caronia, Liverpool, 8 cs.

COPY PAPER

Japan Paper Company, Takoaka Maru, Yokohama, 13 cs.

PAPER

Japan Paper Company, Takoaka Maru, Yokohama, 27 cs.

Iwai & Co., Takoaka Maru, Kobe, 4 cs.

Judson Freight Forwarding Company, Suffren, Havre, 9 cs.

J. Munroe Company, Hansa, Hamburg, 8 cs.

Wilkinson Brothers & Co., Inc., Orduna, Hamburg, 127 bls.

Hensel, Bruckman & Lorbacher, Manchuria, Hamburg, 5 cs.

Japan Paper Company, by same, 18 cs.

Hensel, Bruckman & Lorbacher, Thuringia, Hamburg, 7 cs.

P. H. Petry Company, by same, 12 cs.

Republic Bag & Paper Company, by same, 416 rolls.

Globe Shipping Company, Yorck, Bremen, 38 cs.

H. Reeve-Angel & Co., Inc., Homeric, Southampton, 3 cs.

Publicity Paper Corporation, Grete, Hamburg, 381 bls.

RAGS, BAGGING, ETC.

E. Keller Company, Inc., Innoko, Antwerp, 146 bls. bagging.

M. O'Meara Company, by same, 106 bls. cotton waste.

E. Keller Company, Inc., Suffren, Havre, 47 bls. rags.

Ayres, Oddy & Co., Caronia, Liverpool, 113 bls. cotton waste.

J. Fyfe & Co., Balsam, Belfast, 114 bls. paper stock.

Equitable Trust Company, C. of Eureka, Leghorn, 41 bls. rags.

I. Abela & Co., Clara, Trieste, 230 bls. rags.

Goldman, Sacks & Co., Yorck, Bremen, 159 bls. rags.

Chase National Bank, Tarantia, Glasgow, 73 bls. paper stock.

Katzenstein & Keene, Inc., Italy Maru, Genoa, 86 bls. bagging.

L. H. Abenheimer, Grete, Hamburg, 178 bls. rags.

Guaranty Trust Company, by same, 87 bls. rags.

Goldman, Sachs & Co., by same, 75 bls. rags.

E. J. Keller Company, Inc., by same, 909 bls. rags.

M. O'Meara Company, by same, 39 bls. rags.

Darmstadt, Scott & Co., by same, 40 bls. rags.

Salomon Brothers & Co., by same, 100 bls. jute waste.

Reis & Co., by same, 70 bls. cotton waste.

Castle & Overton, Grete, Hamburg, 127 bls. rags.

Castle & Overton, Ala, Rotterdam, 48 bls. rags.

Katzenstein & Keene, Inc., by same, 68 bls. rags.

A. Silberman, by same, 33 bls. rags.

R. Wolff, by same, 222 bls. rags.

E. J. Keller Company, Inc., by same, 34 bls. rags, 156 bls. bagging.

Waste Material Trading Corporation, by same, 134 bls. bagging.

OLD ROPE

Brown Brothers & Co., Boston City, Bristol, 153 coils.

CASEIN

Bank of the Manhattan Company, Grete, Hamburg, 152 bags.

CHINA CLAY

English China Clay Sales Corporation, Boston City, Bristol, 26 casks, 13 tons.

J. W. Higman & Co., Elm Park, Fowey, 400 casks, 200 tons; 1,421 tons 8 cwt. (buck).

Baring Brothers & Co., Ltd., by same, 1,266 tons 9 cwt. (buck).

WOOD FLOUR

A. Kramer & Co., Inc., Orduna, Hamburg 399 bags.

WOOD PULP

H. Hollesen, Yorck, Bremen, 125 bls. wood pulp.

Bulkley, Dunton & Co., by same, 1,050 bls. sulphite pulp.

Nilsen, Lyon & Co., Inc., by same, 300 bls. sulphite pulp.

Whalen Pulp & Paper Mills, M. Dollar, Port Alice, B. C., 5,100 bls. bleached sulphite pulp, 729 tons.

Whalen Pulp & Paper Mills, M. Dollar, Vancouver, B. C., 1,870 bls. unbleached sulphite pulp, 267 tons.

PHILADELPHIA IMPORTS

WEEK ENDING JULY 28, 1923

H. Reeve Angel & Co., Inc., Innoko, Antwerp, 124 cs. news print, 163 bls. news print, 75 rolls news print.

Paper House of Pennsylvania, by same, 401 rolls news print, 304 cs. news print.

N. Rice & Co., Grete, Hamburg, 27 cs. crepe paper, 10 bls. crepe paper.

Corn Exchange Bank, by same, 56 cs. paper.

E. J. Keller Co., Inc., Ind. Hall, Havre, 30 bls. rags.

E. J. Keller Co., Inc., Innoko, Antwerp, 1,135 bls. rags, 70 bls. thread waste.

Castle & Overton, by same, 79 bls. rags.

Castle & Overton, Burgerdyk, Rotterdam, 41 bls. rags.

Castle & Overton, C. of Eureka, Leghorn, 655 bls. rags.

Equitable Trust Company, by same, 143 bls. rags.

New York Trust Company, by same, 76 bls. rags.

Katzenstein & Keene, Inc., Norfolk Range, Leith, 128 bls. rags.

Katzenstein & Keene, Inc., Ala, Rotterdam, 51 bls. rags.

D. J. Murphy, by same, 36 bls. rags.

E. J. Keller Company, Inc., by same, 379 bls. rags.

Waste Material Trading Corp., by same, 79 bls. rags.

Castle & Overton, by same, 243 bls. rags.

Castle & Overton, Grete, Hamburg, 605 bls. rags.

Waste Material Trading Corp., by same, 478 bls. rags.

E. J. Keller Company, Inc., by same, 451 bls. rags.

Reis & Co., by same, 59 bls. thread waste.

E. J. Keller Company, Inc., Virginia, Copenhagen, 258 bls. old rope.

BALTIMORE IMPORTS

WEEK ENDING JULY 28, 1923

R. F. Hammond, Inc., West Haven, Antwerp, 3,080 rolls. news print.

Katzenstein & Keene, Inc., C. of Eureka, Leghorn, 63 bls. rags.

R. F. Hammond, Inc., Trolleholm, Gothenburg, 1,500 bls. wood pulp, 300 tons.

BOSTON IMPORTS

WEEK ENDING JULY 28, 1923

E. J. Keller Company, Inc., Gutfield, Hamburg, 304 bls. rags.

E. J. Keller Company, Inc., Burgerdyk, Rotterdam, 16 bls. linen threads.

Paper Makers Chemical Company, Elm Park, Fowey, 119 tons 16 cwt. china clay.

L. A. Salomon & Bros., by same, 24 tons 7 cwt. china clay.

J. W. Higman Company, by same, 100 tons, 17 cwt. china clay.

Baring Bros. & Co., Ltd., by same, 1,119 tons 19 cwt. china clay.

Morey & Co., by same, 197 tons 9 cwt. china clay.

J. Richardson Company, by same, 981 tons 2 cwt. china clay, 50 casks, 25 tons china clay.

Morey & Co., by same, 20 casks, 10 tons china clay.

EASTON, PA., IMPORTS

WEEK ENDING JULY 28, 1923

Papermakers Importing Company, Elm Park, Fowey, 1,255 tons, 2 cwt. china clay, 140 casks, 70 tons china clay.

NEW ORLEANS IMPORTS

WEEK ENDING JULY 28, 1923

Castle & Overton, Maasdam, Rotterdam, 59 bls. rags.

Castle & Overton, Darington Court, Havre, 122 bls. rags.

E. J. Keller Company, Inc., Coldbrook, Antwerp, 580 bls. bagging.

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280 Broadway

Dayton Office

Chicago Office
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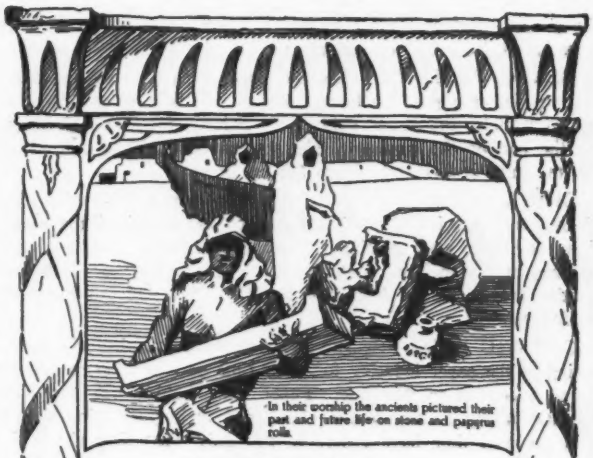

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Miscellaneous Markets

OFFICE OF THE PAPER TRADE JOURNAL,
WEDNESDAY, August 1, 1923.

Although there have been distinct signs in the paper market during the week that the demand was freshening a similar condition has not made itself evident in the chemical market as far as buying on the part of the paper mills is concerned. Conditions in this market remained absolutely static and there was not a single change in the price of one of the commodities listed. The sodas are moving better, but this is due to the buying of other industries, dealers report. Prices are said to be very firm and this is taken as an indication that the market has developed a more healthy undertone.

BLEACHING POWDER.—While the call for bleach in the open market has been extremely uncertain prices have remained just about the same except in cases where over-anxious sellers have made radical slashes to get a quick turnover. The price remains at from 1.60 to 1.65 cents a pound.

BLANC FIXE.—There has not been much demand for blanc fixe during the past week and dealers are holding the price at approximately the same point and waiting for better business at the end of the summer. The price is still $50 to $55 a ton on the pulp grades and $80 to $85 on dry.

CHINA CLAY.—Paper mills were not interested in china clay during the last few days, but the price has remained the same. Few contracts were coming in and importers say that they do not expect any in large quantities for a few weeks yet. Domestic grades are quoted at from $14 to $17 a ton and the imported at $15 to $23.

CAUSTIC SODA.—Caustic has not proved particularly interesting to the paper industry for some time now and the past week is no exception to this rule. Paper mills frankly say that they are not laying in any stocks ahead and their purchasing agents still say that they have orders to buy only what they absolutely need. The price on a flat basis is said to be at about 3.17 to 3.20 cents a pound although this basis is more or less nominal and it can be purchased lower in large quantities.

CASEIN.—Casein has not changed during the current week and dealers say that they do not expect it to do so until the latter part of next month when the paper manufacturers have to come into the market strongly once more to take care of their fall production. Quotations are still at 15.50 to 17 cents a pound.

CHLORINE.—Liquid chlorine is moving slowly. There has been little demand for it on the open market owing to the hand-to-mouth buying policy of the paper mills. There are not many contracts being filled but manufacturers do report that they are receiving many inquiries which indicate that the mills are going to do some heavy buying when they do enter the market again in the fall. In tanks it is quoted at from 4.20 to 4.40 cents a pound although, like other chemicals, it is said to be possible to buy it a little under this when a large shipment is desired.

ROSIN.—Naval stores are still suffering from the summer lassitude, but dealers do not seem to be particularly worried and are inclined to wait for a more promising market before hurrying after business. The price on the grade of interest to papermakers remains at about 6.10 to 6.15 cents a pound.

SALTCAKE.—Although the demand remained poor the price of saltcake did not change. It is now quoted at about $23 to $24 a ton.

SODA ASH.—Little movement of soda ash in the open market has occurred during the past week so far as paper mills were concerned. Other industries, however, are coming into the market for increasingly large orders. The price is still 1.50 to 2.00 cents a pound.

SULPHATE OF ALUMINA.—Alumina sulphate has been in poor demand and dealers say that it is moving very slowly. The price has shown a slight falling off and is now quoted at 2.05 to 2.25 on the iron free grade and 1.25 to 1.35 on the commercial.

Market Quotations

(*Continued from page 61*)

No. 1 Mixed	1.60	@	1.75
No. 2 Mixed	1.25	@	1.50
Solid Ledger Stock	2.50	@	2.75
Writing Paper	2.25	@	2.50
No. 1 Books, heavy	2.00	@	2.25
No. 2 Books, light	1.40	@	1.50
No. 1 New Manila	2.75	@	3.00
No. 1 Old Manila	1.50	@	1.75
Container Manila	1.35	@	1.50
Old Kraft	2.25	@	2.50
Overissue News	1.50	@	1.60
Old Newspaper	1.00	@	1.50
No. 1 Mixer Paper	1.00	@	1.10
Common Paper	.80	@	.90
Straw Board, Chip	1.00	@	1.10
Binders Bd., Chip	1.00	@	1.10

Domestic Rags—New.
Price to Mill, f. o. b. Phila.

Shirt Cuttings—			
New White, No. 1	.12	@	.12¼
New White, No. 2	.07	@	
Silicias, No. 1	.07¼	@	.07½
New unbleached	.10	@	.11
Washables	.04½	@	
Fancy	.05¼	@	.05¾
Cottons—according to grades—			
Blue Overall	.05½	@	.05¾
New Blue	.02¼	@	.02¾
New Black Soft	.06¼	@	.06¾
New Light Seconds	.02¾	@	.02¾
Khaki Cuttings	.11	@	.04¾
Cordurey	.03¾	@	.04
New Canvas	.03¾	@	.03¾
New Black Mixed	.04	@	
Old			
White, No. 1—			
Repacked	.06	@	.06¼
Miscellaneous	.04½	@	.04¾
White, No. 2—			
Repacked	.03½	@	.04
Miscellaneous	.03	@	.03¼
Thirds and Blues—			
Repacked	2.00	@	2.25
Miscellaneous	1.85	@	1.90
Black Stockings	2.75	@	3.00
Roofing Stock—			
No. 1	1.35	@	1.40
No. 2	1.25	@	1.30
No. 3	1.15	@	1.20
No. 4	1.15	@	1.20
No. 5A	1.10	@	
B			nominal
C			nominal

BOSTON

[FROM OUR REGULAR CORRESPONDENT.]

Paper

Bonds	.09½	@	.43
Ledgers	.09½	@	.55
Writings	.08½	@	.42
Superfine	.16	@	.26
Fine	.15	@	.18
Books, S. & S. C.	.07¼	@	.12
Books, M. F.	.06¾	@	.09½
Books, coated	.09	@	.15
Label	.09	@	.13
News, sheets	4.75	@	6.00
News, rolls	4.50	@	5.75
Manilas—			
No. 1 Manila	$6.00	@	7.00
No. 1 Fiber	.06½	@	.07
No. 1 Jute	9.00	@	10.50
Kraft Wrapping	.07	@	
Common Bogus	3.50	@	3.85

Boards

(Per Ton Destination)

Chip	$60.00	@	—
News, Vat Lined	60.00	@	62.00
Wood, Vat Lined	70.00	@	—
Filled News Board	60.00	@	62.50
Solid News Board	67.00	@	70.00
S. Manila Chip	70.00	@	77.50
Pat. Coated	87.50	@	95.00

Old Papers

Shavings—			
No. 1 Hard White	4.00	@	4.15
No. 1 Soft White	3.25	@	3.35
No. 1 Mixed	.90	@	1.00
Ledgers & Writing	2.00	@	2.25
Solid Books	1.75	@	1.85
Blanks	1.25	@	1.50
No. 2 Light Books	1.50	@	
Folded News, overissues	1.00	@	
Gunny Bagging	1.00	@	—
Manila Rope	5.00	@	5.25
Common Paper	.70	@	.80
Common Mixed	.70	@	.75
Old News	.90	@	
Old Kraft	2.25	@	—
No. 1 Scrap Burlap	.90	@	1.00
No. 2 Roofing Bagging	.60	@	.70
Mixed Strings, 1 cent per lb.			
No. 1 Roofing Rags	1.55	@	—

TORONTO

[FROM OUR REGULAR CORRESPONDENT.]

Paper

(Mill Prices to Jobbers f. o. b. Mill)

Bond—			
Sulphite	.11	@	.12½
Light tinted	.12	@	.13½
Dark Tinted	.13¼	@	.15
Ledgers (sulphite)	—	@	.13
Writing	.09¼	@	.12
News, f. o. b. Mills—			
Rolls (carloads)	3.75	@	—
Sheets (carloads)	—	@	4.50
Sheets (2 tons or over)	—	@	4.75
Book—			
No. 1 M. F. (carloads)	9.00	@	—
No. 2 M. F. (carloads)	8.00	@	—
No. 3 M. F. (carloads)	7.50	@	—
No. 1 S. C. (carloads)	9.50	@	—
No. 2 S. C. (carloads)	8.50	@	—
No. 1 Coated and litho.	14.00	@	—
No. 2 Coated and litho	13.00	@	—
No. 3 Coated and litho.	12.25	@	—
Coated and litho., colored	14.25	@	—
Wrapping—			
Grey	5.00	@	—
White Wrap	5.75	@	—
"B" Manila	6.00	@	—
No. 1 Manila	7.25	@	—
Fiber	7.25	@	—
Kraft, M. F.	8.00	@	—
M. G.	8.15	@	—

Pulp

(F. o. b. Mill)

Ground wood	$36.00	@	38.00
Sulphite easy bleaching	60.00	@	65.00
Sulphite news grade	50.00	@	55.00
Sulphite, bleached	90.00	@	92.50
Sulphate	70.00	@	72.50

Old Waste Papers

(In carload lots, f. o. b. Toronto)

Shavings—			
White Env. Cut	3.65	@	—
Soft White Book shavings	3.30	@	—
White Blk. News	1.80	@	—
Book and Ledger—			
Flat Magazine and Book Stock(old)	1.30	@	—
Light and Crumpled Book Stock	1.15	@	—
Ledgers and Writings	1.85	@	—
Solid Ledgers	2.00	@	—
Manilas—			
New Manila Cut	1.90	@	—
Printed Manilas	1.55	@	—
Kraft	2.25	@	—
News and Scrap—			
Strictly Overissue	1.00	@	—
Folded News	1.00	@	—
No. 1 Mixed Papers	.85	@	—
Domestic Rags—			
Price to mills, f. o. b. Toronto			Per lb.
No. 1 White shirt cuttings	12	@	
No. 2 White shirt cuttings	.06	@	—
Fancy shirt cuttings	.05½	@	.06
No. 1 Old Whites	.04½	@	—
Third and blues	.02½	@	.02½
			Per cwt
Black stockings	.03	@	—
Roofing stock:			
No. 1	—	@	—
No. 2	—	@	—
Roofing stock:			
Manila rope	.05½	@	.06
No. 2	1.55	@	—
Gunny bagging	.01½	@	—